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/9835

UDC 581.192.7

BRASSINS--STEROID PLANT HORMONES

Moscow USPEKHI SOVREMENNOY BIOLOGII in Russian Vol 102, No 5, Sep-Oct 86 p 314

[Article by K.Z. Gamburg]

[Synopsis] A new group of plant growth regulators of steroid nature--brassinolides--have been found. Their high content is found in pollen, but they are also found in vegetative organs and flowers. The chemical synthesis of brassinolides is utilized and investigations for establishing the relationship between structure and biological activity are described. Brassinolides stimulate plant growth, the formation of ethylene, and are active in a series of bioassays on auxins, gibberellins and cytokinins. Nevertheless, according to the character of their biological activity, they cannot be related to any of the known groups of phytohormones and have to be regarded as a new independent group.

12999/9835
CSO: 1840/316

UDC 633.511:581.6

PLANT REGENERATION FROM CALLUS TISSUES OF GOSSYPIUM KLOTZSCHIANI

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 292, No 2, Jan 87
(manuscript received 22 Apr 86) pp 502-505

[Article by A. Abdukarimov, N.N. Kuznetsova, I.N. Grigina, S.A. Dzhatayev and A.S. Sadykov, academician, Institute of Bioorganic Chemistry, Uzbek SSR Academy of Sciences, Tashkent]

[Abstract] Long-term studies were conducted on the regeneration of a cotton plant from the callus of Gossypium klotzschiani anderss. Details are presented on the conditions of illumination and concentrations of nutrients employed in the various stages and passages, as well as the use of plant growth regulators. The successful plant regeneration from the callus tissue of a leaf from a diploid plant (2n = 26 chromosomes) demonstrated that it is possible to induce organogenesis and somatic embryogenesis in a wild species of cotton. Figures 1; references 12: 5 Russian, 7 Western.

12172/9835
CSO: 1840/326

UDC 581.1

EXPRESSION OF HEAT SHOCK PROTEINS IN COLD STRESS IN SOYA

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 292, No 2, Jan 87
(manuscript received 15 May 86) pp 505-507

[Article by J. Kimpel (USA), Vl.V. Kuznetsov, J. Gokdzhiyan [sic] (USA) and Dzho Ki [sic: J.L. Key?] (USA, Institute of Plant Physiology imeni K.A. Timiryazev, USSR Academy of Sciences, Moscow; Georgia University, Athens, USA]

[Abstract] A study was conducted to determine the effects of cold exposure on the expression of genes governing heat shock proteins in soya. The approach involved determination of the levels of mRNA of the heat shock

proteins following heat or cold exposure by means of blot-hybridization of plasmid pCE 54 with poly(A)$^+$RNA of the shoots. The resultant data showed that transcription of the heat shock group of genes was inhibited in shoots exposed to 4°C for 10 min, but activated by exposure to 40°C for 2 h. The inhibition of the heat shock protein expression by cold exposure was selective in nature, in that 'normal' gene transcription was not inhibited. Figures 3; references 13: 1 Russian, 12 Western.

12172/9835
CSO: 1840/326

UDC 581.+581.19

WHEAT-STEM RUST RELATIONSHIP AS MODEL FOR PHYSIOLOGICAL AND BIOCHEMICAL RELATIONSHIPS IN HOST-PARASITE SYSTEMS

Moscow ZHURNAL OBSHCHEY BIOLOGII in Russian Vol 47, No 3, May-Jun 86 (manuscript received 18 Mar 85) pp 310-327

[Article by V.V. Chigrin, North Caucasian Scientific Research Institute of Phytopathology, Krasnodar]

[Abstract] In order to review some of the physiological and biochemical aspects of host-parasite relationships affecting the plant kingdom, a review was conducted on the wheat-stem rust systems employing data obtained for susceptible, moderately resistant, and highly resistant wheat varieties. Evaluation of the data available for the so-called 'critical period', i.e., within 1-3 days of infection, demonstrated significant differences between moderately and highly resistant wheat varieties in terms of response to haustoria. The high-resistance wheats responded with less pronounced elevations in the activities of a variety of enzymatic activities, carboxylic acids, and various plant factors and hormones, but with a greater increase in the levels and/or activities of fungicidal biomolecules. More often than not, such fungicidal products are not evident in uninfected plants. Basically, high-resistance plants respond with elevation of abscisin and ATP, with concomitant depression of the hydrolytic and oxidative activities and of the permeability of the plant tissues. Figures 2; tables 1; references 106: 37 Russian, 69 Western.

12172/9835
CSO: 1840/366

UDC 633.11"321":631.52:581.5(549.3+470.31)

EVALUATION OF SPRING WHEAT VARIETIES UNDER DIFFERENT CLIMATIC CONDITIONS

Moscow IZVESTIYA TIMIRYAZEVSKOY SELSKOKHOZYAYSTVENNOY AKADEMII in Russian
No 4, Jul-Aug 85 (manuscript received 18 Apr 85) pp 96-103

[Article by Yu.B. Konovalov and Nizamuddin Al-Khusseyni, Chair of Crop Genetics, Breeding and Seed Production]

[Abstract] Studies were conducted on the identification of traits of 121 varieties of spring wheat obtained from different geographic locations that may be used in genetic and breeding programs. The tests were conducted in Moscow and Dacca (Bangladesh) and demonstrated that, of the 12 traits monitored, 4 traits yielded high positive correlation coefficients between these two test sites. Best correlation was obtained for total leaf area, followed by somewhat lower but still significant correlations for the weight of 1000 seeds, plant height, and length of main spike. Of the 121 varieties undergoing testing, 12 were found to be photoneutral, and an additional 27 varieties were not affected by the length of the day. These observations indicate, therefore, that the same traits may be used for genetic and breeding purposes of spring wheat in widely differing climatic situations. Figures 2; references 12: 7 Russian, 5 Western.

12172/9835
CSO: 1840/1040

UDC 633.15:581.133.1

REUTILIZATION OF NITROGEN IN CORN HYBRIDS DIFFERING IN RATE OF MATURATION

Moscow IZVESTIYA TIMIRYAZEVSKOY SELSKOKHOZYAYSTVENNOY AKADEMII in Russian
No 4, Jul-Aug 85 (manuscript received 2 Jan 85) pp 104-110

[Article by M.N. Kondratyev and T.G. Samoylenko, Chair of Plant Physiology]

[Abstract] An analysis was conducted on nitrogen reutilization from leaves of several corn hybrids differing in the rate of plant maturation. The data demonstrated that, in the early-maturing KVS-701 variety, reutilization of leaf nitrogen commences earlier than in those that mature later, such as Dnepr-758 or Pioner-3978. Most of the reutilized nitrogen is derived from leaf proteins, and the loss of leaf nitrogen shows a direct correlation with the increase in activity of "aging proteases". Only ca. 0.3% of the nitrogen in the caryopsis was derived from the chlorophyll. Figures 4; references 14: 7 Russian, 7 Western.

12172/9835
CSO: 1840/1040

UDC 576.851.5:577.153.211:632.937.15:616.098

HEMOCYTE ALTERATION OF GALLERIA MELLONELLA L. UNDER ACTION OF PHOSPHOLIPASE AND THERMALLY LABILE EXOTOXIN OF BACILLUS THURINGIENSIS BACTERIA. Part 3. COMMUNICATION. PATHOLOGICAL CHANGES OF LARVAE HEMOCYTES UNDER ACTION OF THERMALLY LABILE EXOTOXIN

Vilnius TRUDY AKADEMII NAUK LITOVSKOY SSR: SERIYA V -- BIOLOGICHESKIYE NAUKI in Russian No 3, Jul-Sep 86 (manuscript received 8 Jul 85) pp 43-50

[Article by V.L. Ivinskene and P.A. Zayanchkauskas, Institute of Zoology and Parasitology, LiSSR Academy of Sciences]

[Abstract] Cytological studies have shown that thermally-labile exotoxin has a toxic effect on various pests ten times as strong as phospholipase; it is manifested by deformation and lysis of hemocytes, hypervacuolization of cytoplasm, picnosis and degeneration of the nucleus. This exotoxin destroys intestinal epithelium and leads to bacteremia caused by the spread of intestinal microflora in hemolymph. Thermally labile exotoxin plays an important role in the pathogenic processes of Bac. thuringiensis through direct toxicosis and development of septicemia. Formation of large quantities of aenocytes and aenocytoides in hemolymph during toxic development indicates their participation in the process of ridding the organism of the toxin. Use of sublethal doses of this exotoxin showed that organisms are capable of trying to combat its instrusion. Figures 2; references 14: 12 Russian, 2 Western.

7813/9835
CSO: 1840/398

UDC 577.3

DIFFERENCES IN EFFECTS OF FERROCENE DERIVATIVES ON ERYTHROCYTE STRUCTURE AND FUNCTION

Tbilisi SOOBSHCHENIYA AKADEMII NAUK GRUZINSKOY SSR in Russian Vol 124, No 1, Oct 86 (manuscript received 24 Oct 85) pp 161-163

[Article by N.G. Kotrikadze, L.P. Asatiani, M.A. Tsartsidze and B.A. Lomsadze, Tbilisi State Univerity]

[Abstract] A study was conducted with different ferrocene derivatives to assess the effects on membrane fluidity and function of chicken erythrocytes. Membrane fluidity was assessed in terms of rotational correlation time of a spin label, and function was evaluated on the basis of changes in the activity of 5'-nucleotidase. Changes in fluidity and enzymatic activity whoed parallel changes, consisting of a decrease in both parameters with an increase in hydrophobicity of the derivatives. On this basis, the agents were ranked as follows on their ability to alter erythrocyte membrane function and structure: ferrocene <1,1^1-dibenzoylferrocene<1-benzoyl-1^1-[1-phenyl-1-oxa-3-(oxycyclohexyl)-2-propinyl]-ferrocene<1-ferrocenyl-1-phenyl-1,3-dioxy-4-methyl-2-pentene. References 3: 1 Russian, 2 Western.

12172/9835
CSO: 1840/340

UDC 615.919:591.145.2

STUDY OF SPECIFIC FLUORESCENCE OF PHOSPHOLIPASE A_2 AND ORIENTATION FROM ORIENTAL HORNET VENOM IN PRESENCE OF IONS--MODULATORS OF THEIR MEMBRANE ACTIVITY

Moscow BIOLOGICHESKIYE NAUKI in Russian No 7, Jul 86 (manuscript received 29 Mar 85) pp 35-39

[Article by N.U. Akhmedova, Ye.Ye. Gussakovskiy, M.U. Tuychibayev, A.I. Gagelgans and B.A. Tashmukhamedov, Institute of Biochemistry, UzSSR Academy of Sciences]

[Abstract] Phospholipase A_2 (PL) and orientotoxin (OT) are very important membrane-active components of the oriental hornet venom. Measurement was made of the individual fluorescence of these two compounds when they interact with ions of calcium, strontium and lanthanum. Ca^{2+}, Sr^{2+} and La^{3} activate phospholipase activity and increase the quantum yield of fluorescence. Tryptophan fluorescence spectra of PL and OT exhibit maxima at 325-27 and 331 nm respectively. In the presence of the activation ions no shifts of these spectra were observed. Evidently, in their presence, deformation of the protein molecule occurs resulting in quenching of tryptophan fluorescence. In presence of Ca^{++}, the temperature of semitransitional process of thermoinactivation of these polypeptides increases by 2°C. Figures 2; references 10: 9 Russian, 1 Western.

7813/9835
CSO: 1840/401

UDC 579.842.22:579.22:577.152].083.12

ISOLATION AND PURIFICATION OF Pmi I ENDONUCLEASE FROM PROTEUS MIRABILIS 1667

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 5, May 85 (manuscript received 11 Nov 84) pp 342-344

[Article by N.L. Bakh, N.V. Tsvetkova, I.E. Semina, A.P. Tarasov, M.M. Mileykovskaya, I.M. Gruber, V.M. Polyachenko and E.Ye. Romanenko, Central Scientific Research Institute of Vaccines and Sera imeni I.I. Mechnikov, Moscow]

[Abstract] A search was conducted for restriction endonucleases in Proteus mirabilis using the strain P. mirabilis 667 cultivated in a nutrient medium based on blood substitutes and Hottinger broth. Fractionation oftthe P. mirabilis cell extract on Sepharose yielded 40 fractions, analyzed by phage λ DNA hydrolysis. The activity of the NaCl, molarity 0.3-0.5 M fraction, indicated the presence of restriction endonuclease. Active fractions contained nonspecific nuclease impurity and were additionally purified by

chromatography, revealing the presence of specific activity in fractions with molarity 0.5-0.6M. The specific endonuclease PmiI is not an isoschizomer of restrictase, broadly used at present. The PmiI site was located in a vicinity of 2.4 units of the map of the plasmid pBR322. PmiI specifically hydrolyzes phage λ DNA to 10 electrophoreticaly distinct fragments with molecular weights of 7.9 to 1.3 MD.
References 7: 2 Russian, 5 Western.

6508/9835
CSO: 1840/288

BIOPHYSICS OF DNA

Yerevan KOMMUNIST in Russian 31 Oct 86 p 4

[Article by V. Ivanov, doctor of physical and mathematical sciences: "Multi-faceted DNA"]

[Text] DNA is called the chief molecule of living organisms. By means of the chemical alphabet, it contains a record of the innumerable traits passed on from parents to children. DNA also contains a program for the development of the organism from a single cell to an adult state.

In his address in Kirovakan at the All-Union Conference on the Physics of DNA, Professor Yu.S. Lazurkin of the USSR Academy of Sciences Institute for Molecular Genetics characterized the state of this area of science in the following way: "In recent years it has been established that DNA has an astonishing capacity to take on the most varied structural forms." Under certain conditions, the usual right-handed spiral of DNA becomes left-handed. Even the spiral itself is capable of changing its form so extensively that cross-shaped and other odd "constructions" can arise.

The exact role of such unusual forms (called alternate forms) in vital activity is still unknown. But the majority of biologists are certain that alterations in the structure of DNA are absolutely essential for its work. In graphic terms, without such transformations "living" DNA is dead.

This is already the third biennial meeting in Armenia of biophysicists from Moscow, Leningrad, Kiev, Kharkov, Tbilisi, Tallin, Novosibirsk, and other cities with their colleagues from Yerevan and Kirovakan to discuss their new research into "multi-faceted" DNA. Physics and physicists play a very large role in this work. Metamorphoses of the DNA double helix are related to the phasal transitions between the various states of substances: solid, liquid, gas. Therefore the methods of both theoretical and experimental physics are put to very extensive use.

The present conference was devoted to energy and structural problems of changes in DNA form and the influence of its enviornment.

At the contemporary stage in the study of DNA, computers are used intensively both for calculations and for obtaining results. Scientists can follow

directly on the screen of a computer how the relative positions of the atoms of this gigantic molecule change as it functions.

Wider aspects of contemporary biophysics were also discussed. Corresponding Member of the USSR Academy of Sciences M.V. Volkenshteyn shared his thoughts on the evolution of living organisms, in particular on the mechanisms of how species die out.

The Kirovakan conference demonstrated that the work of Soviet scientists in the area of DNA physics is at a high level. The discussions touched on the most immediate goals and problems. The conference contributed to cooperation between specialists, without which the development of modern science is impossible.

The conference was organized by the Yerevan State University Department of Molecular Physics and Biophysics and the Kirovakan Pedagogic Institute Department of Physics, which are carrying out intensive research in this topical area.

13124/9835
CSO: 1840/202

BIOTECHNOLOGICAL TRENDS IN MEAT INDUSTRY

Moscow MYASNAYA INDUSTRIYA in Russian No 9, Sep 86 pp 32-34

[Article by A.A. Belousov, candidate of veterinary sciences, and L.I. Stekolnikov, doctor of biological sciences, All-Union Scientific Research Institute of the Meat Industry]

[Abstract] An evaluation of trends in biotechnology has shown relatively few applications pertaining to the meat industry. Excluding the use of single-cell proteins in sausage and some other products, as well use of various microbiological processes in processing meat products, the impact of biotechnology on the meat industry has been limited. The areas in which biotechnology would appear to be most promising, especially gene engineering technology, involve breeding programs for improved meat production. However, the more immediate applications involve improved technologies for processing byproducts and for more efficient utilization of the byproducts and expansion of the product line. A more concerted effort is required to assure closer cooperation of industrial and research institution to ensure practical application of basic research, particularly as this applies to the meat industry.

12172/9835
CSO: 1840/1037

UDC 579.852.12:579.255

FUSION OF PROTOPLASTS OF BACILLUS SUBTILIS AND BACILLUS LICHENIFORMIS. INTERSPECIES RECOMBINATION RESULTING FROM PROTOPLAST FUSION

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 9, Sep 85 (manuscript received 20 Mar 85) pp 643-

[Article by N.G. Yaroslavtseva, T.A. Gaydenko, V.I. Zvenigorodskiy and V.G. Zhdanov, All-Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms, Moscow]

[Abstract] Protoplast fusion has been used in eucaryotes to produce both intraspecies and interspecies hybrids. This article establishes the possibility of producing interspecies hybrids of comparatively remote species of bacillus, B. subtilis and B. licheniformis, by fusion of protoplasts. The recombinants produced are interesting with respect to reports in the literature indicating absence of heterologic transformations at auxotrophic loci between B. subtilis and B. licheniformis. The production of such interspecies recombinants of comparatively remotely located species of bacillus may facilitate the solution of a number of practical problems, including antibiotic production. Fusion of bacterial protoplasts as a method of transferring genetic material may allow production of intraspecies and interspecies hybrids to utilize the gene fund of antibiotic producers to construct high-active industrial strains. References 33: 12 Russian, 21 Western.

6508/9835
CSO: 1840/291

UDC 582.288-11

MYKORM FEED ENRICHING PRODUCT

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 47, No 6, Nov-Dec 85 (manuscript received 16 Sep 85) pp 91-92

[Article by V.I. Bilay, S.M. Bakay, R.I. Tomchuk, T.I. Bilay, L.A. Zakordonets, Yu.V. Lizak, Z.A. Kurbatskaya, Ye.G. Musich and A.A. Rensevich, Institute of Microbiology and Virology, UkSSR Academy of Sciences, Kiev; All-Union Scientific Research Institute of Swine Breeding, Poltava; Department of Microbiology, Moldavian Academy of Sciences, Kishinev; TSNIPTIMEZH Institute, Zaporozhe]

[Abstract] The authors first demonstrated in 1969 the possibility of enriching agricultural feeds with selected strains of Fusarium moniliforme and Trichoderma lignorum by solid phase fermentation. Since that time, active strains have been selected from 4,000 micromycete isolates, having good ability to transform plant polymers to proteins, vitamins and other substances. These studies have shown that cultivation of protein-producing fungi on

various cellulose and starch-containing raw materials yields a radically new type of feed product called Mykorm, which contains 3 to 8 times more protein, vitamins, lipids and other physiologically active substances than the initial substrate. In March of 1985, a conference was held entitled "Biotechnology of Fungus Protein Enrichment of Feed" in Poltava. Subjects discussed included the mycologic aspects of enrichment of feed with protein, the effectiveness of utilization of fungus-enriched feeds for agricultural animals, and the status of development of the technology of production of feeds by this method. Mykorm can be substituted for up to 15% of feed concentrates for animals. References 10: 7 Russian, 3 Western.

6508/9835
CSO: 1840/284

UDC 615.273.53:577.429].012.6:57.085.23

SCREENING HUMAN AND ANIMAL CELL CULTURES FOR PRODUCERS OF PLASMINOGEN ACTIVATORS

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 31, No 8, Aug 86 (manuscript received 28 Jun 85) pp 756-760

[Article by M.A. Kapina, M.G. Zelenin and B.B. Yegorov, Scientific Research Institute of Biomedical Technology, USSR Ministry of Health, Moscow]

[Abstract] A total of 26 human and animal normal and tumor cell cultures were screened for producers of tissue plasminogen activators. The results were variable, with production depending on the nature, origins, and species. However, high activity was exhibited by primary embryonal renal cultures from man and calves. Subsequent subculturing resulted in diminished levels of production. Nevertheless, recurrence of activity was seen after 40 to 47 days of incubation. In addition, certain cultures retained long-term ability to produce the activators, particularly BHK-21 and PT-2 cell lines. On the whole, malignant cells were higher producers, while suspension cultures were routinely inefficient. Figures 1; references 9 (Western).

12172/9835
CSO: 1840/337

UDC 576.8.095+577.212

GENETIC ENGINEERING TASK IN RESOLUTION OF PROTEIN SECRETION BY BACTERIA

Moscow USPEKHI SOVREMENNOY BIOLOGII in Russian Vol 102, No 5, Sep-Oct 86 p 179

[Article by M.A. Nesmeyanov]

[Synopsis] The most important problems of the molecular biology of protein secretion are discussed, concerning the nature of endogenous and extragenous information, determining the secretion as well as the contribution of genetic engineering to their solutions. By means of site-directed mutagenesis, deletion analysis and the technique of fusion of genes, it is established that information on the various stages of secretion is based on the different structural domains of the secreted protein. A decisive role is played among them by the signal peptide, positioned on the N-end of the polypeptide chain of the precursors of secreted proteins. The nature of the extragenic information determining the protein secretion is revealed by the search for the suppressors of mutants with secretion defect due to the destruction of the structure of the signal peptide. The protein components of the secretory apparatus are determined. The biotechnological aspects of the secretion problem are studied, especially, the use of vector molecules formed on the basis of the genes of the secreted protein for accomplishing the expression and secretion in the bacteria of the products of foreign genes.

12999/9835
CSO: 1840/316

UDC 632.153:546.42:546.36:635.34

NON-ROOT SR-90 AND CS-137 CONTAMINATION OF DIVERSE VARIETIES AND TYPES OF CABBAGE

Moscow AGROKHIMIYA in Russian No 11, Nov 86 (manuscript received 18 Jun 85) pp 90-94

[Article by Ye.R. Ryabova and N.N. Peshcherova]

[Abstract] Little previous study has been made of the topic of the present article, devoted to levels of contamination of various cabbages by strontium 90 and cesium 137. Surface parts of six varieties were studied by applying radionuclides--65 MBk/l of Sr-90 and 44 MBk/l of Cs-137. The hydrophylic nature of individual varieties and their total surface area were determined to be key features in the effects of radioactive exposure. Varieties tested included kohlrabi, cauliflower, Brussels sprouts, and red and white cabbages. Results indicated that Savoy cabbage retained the highest water amounts, while Amager white cabbage held the least. Morphological features were used to assess the retention of Sr-90 and Cs-137. At maturity, wide variations in radioactive substance retention were noted. The highest levels were found in cauliflower, along with Vienna Early Savoy cabbage. White head cabbage with a waxy outer surface and a conical form, as well as similar red cabbage, along with kohlrabi, showed the least retention of the radionuclides. Hower levels of Sr-90 (where content varied as much as 26 times) compared to Cs-137 (varying only up to 7 times) are attributed to the former's greater biological mobility.

12131/9835
CSO: 1840/349

UDC 616.31+616.329]-006.6-036.22

RISK FACTORS OF MOUTH AND ESOPHAGEAL CANCER IN REGION WITH HIGH MORBIDITY

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 10, Oct 86
(manuscript received 5 Nov 84) pp 31-36

[Article by D.G. Zaridze and N.N. Trapeznikov, All-Union Oncological Scientific Center, USSR Academy of Medical Sciences, Moscow]

[Abstract] A total of 1569 men, 55-69 years old, in the Samarkand Oblast of the Uzbek SSR were examined for precancerous lesions of the mouth and the esophagus, as well as asked to fill out questionnaires on tobacco and nas (tobacco-lime-ash-cottonseed oil mixutre) use. The study demonstrated that 41% of cohort used nas, which has been shown to contain nitroso compounds characteristic of tobacco. The relative risk of developing cancer of the mouth was found to be increased 5.6-fold in nas users, and 7.7-fold in cigarette smokers. The risk factor was highest in individuals engaging on both smoking and nas use (12.4-fold), while the risk of esophageal cancer was increased 1.8-fold in subjects who smoked and, also, drank strong alcoholic beverages. In addition, clinical chemistries demonstrated that blood levels of vitamin B_2, carotene and vitamin A were depressed in most of the subjects to the normal lower range. In a region with a high morbidity of mouth and esophageal, prevention should obviously involve vitamin supplements and educational measures directed at nas users and smokers on the adverse effects of their habits. References 24: 6 Russian, 18 Western.

12172/9835
CSO: 1840/319

UDC 616.127-005.4-056-053.88-055.1(470.64)

ISCHEMIC HEART DISEASE AND RISK FACTORS IN 40-59 YEAR OLD MALES IN KABARDINO-BALKAR ASSR

Moscow KARDIOLOGIYA in Russian Vol 26, No 9, Sep 86 (manuscript received 15 May 85) pp 82-85

[Article by R.Kh. Medalieyva, L.M. Khuranova, G.I. Barasbiyeva, Kh.A. Kurdanov, V.A. Polesskiy, B.D. Dzantuyeva, M.K. Sharafutdinova, T.A. Varlamova and M.A. Akhmeteli, Kabardino-Balkar University; Scientific Research Institute of Preventive Cardiology, All-Union Cardiological Scientific Center, USSR Academy of Medical Sciences, Moscow]

[Abstract] A study was conducted on the incidence of ischemic heart disease (IHD) and risk factors in Nalchik (379 men) and a rural area (320 men) of Kabardino-Balkar ASSR among 40-59 year old males. On the basis of questionnaires and medical examinations, the incidence among the urban [Nalchik City] males of IHD was found to be 10% (vs. 9.6% for Moscow), and significantly lower among the rural males--6.2% ($P<0.01$). Assessment of risk factors showed that the prevalence of hypertension, hyperlipemia, and obesity among the male residents of Nalchik was significantly higher than among the rural males. References 7: 6 Russian, 1 Western.

12172/9835
CSO: 1840/369

UDC 618.19-006.6-036.8(474.2)"1968-1981"

1968-1981 SURVIVAL RATE STATISTICS FOR BREAST CANCER IN ESTONIA

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 12, Dec 86 (manuscript received 25 Jan 85) pp 8-12

[Article by T.P. Aareleyd, Institute of Experimental and Clinical Medicine, Estonian SSR Ministry of Health, Tallin]

[Abstract] A case study analysis was conducted on the survival figures for breast cancer in the Estonian SSR for the period 1968-1981. The data demonstrated that the 5-year survival rate with a probability of 0.95 was $50.7 \pm 1.8\%$ ($P_5 \pm 2S_5$), and a relative rate of $55.9 \pm 2.0\%$ ($R_5 \pm 2_{S_5}$). The 10-year survival rate was established at $38.3 \pm 2.0\%$. References 22: 8 Russian, 14 Western.

12172/9835
CSO: 1840/379

UDC 618.19-006.6-08

ANALYSIS OF OUTCOME OF BREAST CANCER TREATMENT: DATA FROM DAGHESTAN ONCOLOGICAL HOSPITAL FOR 1969-1983

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 12, Dec 86
(manuscript received 9 Dec 85) pp 53-57

[Article by A.U. Nurov, Daghestan Medical Institute, RSFSR Ministry of Health, Makhachkala]

[Abstract] An analysis was conducted on the outcome of various treatment modalities employed in the management of patients with breast cancer at the Daghestan Oncological Hospital for the period 1969-1983. Of the 566 cases reviewed the data revealed an overall 5 year survival rate of 47.5%. With radical mastectomy the survival rate was 68.2%, with gamma irradiation + radical mastectomy 43.1%, with radical mastectomy + chemotherapy 48.0%, with gamma therapy + radical mastectomy + chemotherapy 42.1%, and with ovariectomy + hormone therapy + gamma therapy + radical mastectomy + chemotherapy 29.0%. The data indicated that treatment itself is a less reliable indicator of eventual survival than the stage at which the lesion is first diagnosed. The earlier the diagnosis, the better the prognosis regardless of the treatment modality. References 10 (Russian).

12172/9835
CSO: 1840/379

UDC 616.12-009.72-055.1-037

PROSPECTIVE STUDIES IN FORMULATING LONG-TERM PROGNOSIS FOR OUTCOME OF ANGINA PECTORIS IN 40-59 YEAR-OLD MALES

Moscow KLINICHESKAYA MEDITSINA in Russian No 1, Jan 87
(manuscript received 10 Dec 85) pp 84-87

[Article by A.S. Prazdnov, No 1 Chair of Internal Medicine, Chelyabinsk Medical Institute]

[Abstract] A long-term follow-up was conducted on two groups of males diagnosed with angina pectoris, with the situation either uncomplicated by hypertension (Group I) or complicated by hypertension (Group II). Each group encompassed 111 males at the start of the study. Analysis of the survival figures after a 20 year period demonstrated that the respective figures for Group I and II patients were 45.0 and 30.5% ($P<0.02$). Furthermore, the differences in the survival figures were primarily due to complications of hypertension, such as cerebrovascular accidents and myocardial infarctions which were almost two-fold greater in Group II. The data also showed 27.8% of the mortality in Group I was due to malignancies, providing further support for the need of efficient mass screening programs. The study does

emphasize the significant risk factor that is represented by hypertension and the need for its rigorous management. References 14: 5 Russian, 9 Western.

12172/9835
CSO: 1840/402

UDC 616-006-084.3:311.2

EVALUATION OF BASIC INDICATORS OF CANCER PREVALENCE

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 9, Sep 86
(manuscript received 6 May 85) pp 11-16

[Article by V.M. Merabishvili]

[Abstract] In order to refine and define Soviet terminology as to cancer morbidity, the suggestion is made to use the term 'prevalence' (rasprostranennost) to designate all living cancer patients at the end of a year under the care of oncologic services. In this sense, 'prevalence' may be used as an indicator of a contingent of patients per a population of 100,000. On this basis, individual indicators may be derived as to various periodsoof time, type of malignancy, site of malignancy, and territory. An analysis on this basis conducted for the 1970-1980 period showed an annual increase in prevalence of 6.1% for the USSR as a whole. For individual malignancies the rate of increase for esophageal cancer was 10.0%, for stomach cancer 2.7%, for rectal cancer 15.0%, for lung cancer 15.6%, for breast cancer 8.2%, and for cervical cancer 4.8%. Figures 2; references 7 (Russian).

12172/9835
CSO: 1840/407

UDC 618.19-006.6-08-039.75

SURVIVAL RATE FOR BREAST CANCER: DATA FROM ALL-UNION CENTER FOR CANCER TREATMENT EVALUATION

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 9, Sep 86
(manuscript received 27 Jan 86) pp 17-24

[Article by D.P. Berezkin, V.F. Semiglazov, V.N. Filatov and V.I. Yekimov, Order of Red Banner of Labor Scientific Research Center of Oncology imeni Prof. N.N. Turner, USSR Ministry of Health, Leningrad]

[Abstract] Cancer survival data collected from 26 oncological centers were evaluated to derive survival statistics for breast carcinoma for the period 1974-1980. Analysis of the data for 9199 patients showed an overall 5 year

survival rate of 55%, with a breakdown of 86% for Stage I, 68% for Stage II, and 39% for Stage III. The corresponding figure for patients in Stage IV was 12%. Survival was favored by adjuvant therapy (surgery + radiotherapy and/or chemotherapy). Patient refusal of radical mastectomy, any other form of therapy, or limitation of the treatment modalities to radio- or chemo-theraphy resulted in a 60-80% mortality figure in the 5 year period for patients with State II-III cancer. Figures 1; references 12: 7 Russian, 5 Western.

12172/9835
CSO: 1840/407

UDC 576.893.192.6.04:615.281].08

DRUG RESISTANCE OF MALARIA PARASITES AND METHODS OF ITS DETERMINATION

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 11, Nov 85 (manuscript received 29 May 85) pp 855-859

[Article by S.A. Rabinovich, I.M. Kulikovskaya and Ye.V. Maksakovskaya, Institute of Medical Parasitology and Tropical Medicine imeni Ye.I. Martsinovsky, Moscow]

[Abstract] The development of drug-resistant strains of Plasmodium falciparum is a major problem in malaria control. In vivo and in vitro tests for drug resistance of P. falciparum are described, including the short-term in vitro or macrotest. A microtest is now available requiring only 100 µl of blood from the finger, a major advantage in the conduct of broad-scale field testing. The various methods of determining drug resistance of P. falciparum supplement each other, each having its advantages and disadvantages. The in vitro method is faster, allowing estimation of the sensitivity of the parasite directly and eliminating a number of factors which might influence the effectiveness of a preparation, but in vitro methods are of limited use at low levels of parasithemia characteristic of carriers. These is still a need for development of a rapid method not requiring complex equipment, which would be easy to perform under field conditions. The authors' institute has developed a method based on the model of P. berghei, the rodent malaria pathogen, based on suppression of glycolytic activity of the parasite, allowing evaluation of results after 4 to 5 hours with a pH meter. References 17: 4 Russian, 13 Western.

6508/9835
CSO: 1840/293

UDC 632.35:633.18+632.4:638.18

XANTHOMONAS CAMPESTRIS PV. ORYZAE, RICE SEED BACTERIOSIS PATHOGEN IN THE UKRAINE

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 47, No 6, Nov-Dec 85 (manuscript received 26 Feb 85) pp 93-95

[Article by I.B. Koroleva, R.I. Gvozdyak and L.A. Pasichnik, Institute of Microbiology and Virology, UkSSR Academy of Sciences, Kiev]

[Abstract] Xanthomonas campestris pv. oryzae (X. kresek, X. oryze, X. itoana) is the most common and harmful rice bacterial disease pathogen. The question of the presence of this species in the USSR is controversial. Establishment of the fact of damage to rice by this pathogen requires experimental confirmation, which was the purpose of this study. Materials used in the study were seeds of various varieties of rice from the harvests of 1976, 1980 and 1983 in the main rice growing regions of the Ukraine. The pathogen was found to be a gram-negative, mobile, small, short bacillus with rounded ends, singly or in pairs. The bacteria were sporeless, with capsules, forming yellow slimy rounded convex smooth shiny colonies with uniform edges. They do not reduce nitrates, form hydrogen sulfide, peptonize milk, do not form indole, liquefied gelatin, leach litmus serum, form acid on glucose, lactose, maltose and cellobios, sometimes on galactose, arabinose, dextran and saccharose. They do not ferment xylose, rhamnose, mannite, inosite, salicyn, sorbite, immuline, raffinose, glycerine or dulcite. Thus, the fact of infestation of rice seeds with Xanthomonas campestris pv. oryzae is demonstrated experimentally for the first time in the Ukraine. Figures 4; references 11: 7 Russian, 4 Western.

6508/9835
CSO: 1840/284

UDC 618.33-007.1+616-007-053.1]-02-07

MAJOR ETIOLOGIC GROUPS OF CONGENITAL ABNORMALITIES: PROBLEMS IN DIAGNOSIS AND CAUSES OF DEATH

Moscow ARKHIV PATOLOGII in Russian Vol 48, No 9, Sep 86
(manuscript received 21 Jan 86) pp 20-25

[Article by G.I. Lazyuk and Ye.D. Cherstvoy, Minsk Branch, Institute of Medical Genetics, USSR Academy of Medical Sciences; 2nd Chair of Pathologic Anatomy, Minsk Medical Institute]

[Abstract] Data on congenital abnormalities (CA) at the Minsk Teratology Center were analyzed for the period 1980-1984, in order to assess etiologic patterns and causes of death. The analysis demonstrated that, in Minsk, 50.8% of the CA were multifactorial in nature, while 14.3% were attributable to single-gene mutations (8.4% for dominant mutations, and 5.9% for recessive inheritance). Chromosomal abnormalities were identified in 7.9% of the total case load, environmental factors were deemed to be responsible for 2% of the CA cases, while the etiology was unclear in 25.1% of the cases.
References 17: 11 Russian, 6 Western.

12172/9835
CSO: 1840/368

UDC 575.1:578.66

GENETIC TRANSFORMATION OF HIGHER-PLANT CELLS BY MICROINJECTION OF DNA

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 2, Mar-Apr 86 (manuscript received 8 Jul 85) pp 314-316

[Article by T.P. Pasternak, P.V. Melnikov, Yu.Yu. Gleba, K.M. Sytnik, V.V. Argentova, A.B. Kaliyev, V.M. Andrianov and E.S. Pizuryan, Institute of Botany imeni N.G. Kholodnyy, Ukrainian SSR Academy of Sciences, Kiev; Institute of Molecular Genetics, USSR Academy of Sciences, Moscow]

[Abstract] This is the first communication reporting on the transformation of higher plant cells by means of microinjection of DNA. The system utilized

2-5-day-old protoplasts derived from a culture of Nicotiana debneyi callus microinjected with plasmids pTiC58, pGV0319, or pSV2Neo. The frequency of genetic transformation obtained in this manner for each plasmid was, respectively, 14, 11 and 9%, yielding in the first two cases transformed N. debneyi cells capable of growth on phytohormone-free medium, and in the latter case on kanamycin-containing medium. Southern blot technique demonstrated that the genomic DNA of the transformed cells contained sequences homologous to the respective plasmid donors. Stem morphogenesis was observed in some of the transformed cultures, further underscoring the potential of this method in the transformation of higher plants. Figures 2; references 10: 1 Russian, 9 Western.

12172/9835
CSO: 1840/417

UDC 579.873.7:579.252.5].08

STUDY OF STREPTOMYCES PLASMID REPLICATION: NUCLEOTIDE SEQUENCE OF DNA OF PLASMID pSB 24.2

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 11, Nov 85 (manuscript received 3 Apr 85) pp 804-811

[Article by A.P. Bolotin, A.V. Sorokin, N.N. Aleksandrov, V.N. Danilenko and Yu.I. Kozlov, All-Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms; All-Union Scientific Research Institute of Antibiotics, Moscow]

[Abstract] Results are presented from determination and analysis of the nucleotide sequence of DNA of the plasmid pSB 24.2. This plasmid, with a molecular weight of 2.4 MD, was discovered in the isolation of plasmid DNA from the strain S. lividans 66. The plasmid transforms protoplasts of S. lividans 66, and is a deletion derivative of pSB 24.1, differing in two areas represented by loops of single-stranded DNA. The nucleotide sequence of the plasmid was determined by the methods of chemical modification and polymer copying. Functional and statistical analysis of the plasmid DNA was performed using a set of programs developed at the Institute of Genetics. The protein-coating DNA sequence which must be continuous for replication of the plasmid was discovered. Two A-T rich areas of DNA were found, as well as an area with a developed pinlike structure. Figures 8; references 19: 3 Russian, 16 Western.

6508/9835
CSO: 1840/293

UDC 618.19-006:612.017.1]-02:615.277.3 interferon

SELECTIVE IMMUNOLOGICAL AND IMMUNOMORPHOLOGIC EFFECTS OF INTERFERON (IF) ON PATIENTS WITH BREAST CANCER

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 10, Oct 86
(manuscript received 1 Jul 85) pp 25-31

[Article by L.N. Mkrtchyan, A.M. Galstyan, T.G. Ovanesbekova, Z.R. Ter-Pogosyan, V.P. Kuznetsov and L.A. Kamalyan, Scientific Research Institute of Radiology and Oncology imeni V.A. Fanardzhayn, Armenian SSR Ministry of Health, Yerevan]

[Abstract] The immunological and immunomorphological sequelae of IF injection directly into the tumor were evaluated in 14 patients with previously untreated stage II breast cancer. The patients received 8×10^4 IU of IF at 3-4 day intervals for 10-12 days, for a total dose of $(240\text{-}320) \times 10^3$ IU. The immunological status of the patients was assessed in terms of spontaneous rosette formation, B-cell rosette formation, inhibition of leukocytes in adhesion tests, and evaluation of delayed-type hypersensitivity with PHA. Although analysis of the clinical effects was not a primary aim in this study, the data revealed that in 4 of the 14 patients a 25% regression in the tumor was noted 2 weeks after the course of IF treatment, and that in a 1.5- to 2-year follow-up there were no recurrences or metastases. IF treatment had no telling effect on B cells, but in some cases timulation of T-cell based immunity was seen to be enhanced. Histological studies showed that IF administration potentiated the lymphohistiocytic response of the stroma, presumably directed at limiting the spread of the malignancy. Figures 1; references 14: 4 Russian, 10 Western.

12172/9835
CSO: 1840/319

UDC 618.9-006.6-08:615.277.3 interferon]-06

MORPHOLOGICAL AND IMMUNOLOGICAL EFFECTS OF INTRAMAMMARY-SITE INJECTION OF ALPHA-INTERFERON (AI) IN PATIENTS WITH BREAST CANCER

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 12, Dec 86
(manuscript received 24 Apr 86) pp 19-23

[Article by Ye.B. Polevaya, V.D. Yermilova and V.I. Kupin, All-Union Oncological Scientific Center, USSR Academy of Medical Sciences, Moscow]

[Abstract] Comparative studies were conducted on a group of 60 female patients with breast cancer to assess the effects of intramammary injection of human AI into the malignancy in terms of histopathology and immunological sequelae. The experimental group of 30 patients received a single injection of either 10,000 IU, 100,000 IU, or 200,000 IU, 5-8 days prior to radical mastectomy. The latter two doses were found to induce extensive cytotoxic changes presenting as histological evidence of tumor destruction in 78.6% of the cases. However, concomitantly, those two doses induced depression of T-cell mediated immunity, which persisted postoperatively. The 10,000 IU dose of AI did not elicite histological changes, but did show an improvement in T-cell mediating immunity which persisted post-operatively. These observations underscore the potential clinical usefulness of AI, but with the caveat that further clinical trials are required to establish the appropriate dosage and regimen of application. References 9: 3 Russian, 6 Western.

12172/9835
CSO: 1840/379

UDC 618.146-006.6-08;615.277.3 interferon

CLINICAL TRIALS WITH HUMAN LEUKOCYTE INTERFERON (HLI) IN CERVICAL CANCER

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 12, Dec 86
(manuscript received 5 Apr 86) pp 23-28

[Article by B.V. Vasilyev, Ya.V. Bokhman, A.A. Smorodintsev, O.F. Chepik, V.I. Novik, N.V. Garmanova, L.I. Dekster, A.N. Stepanov and V.I. Iovlev, Order of the Red Banner of Labor Scientific Research Institute of Oncology imeni Prof. N.N. Petrov, USSR Ministry of Health, Leningrad; Order of the Red Banner of Labor Scientific Research Institute of Epidemiology and Microbiology imeni Pasteur, RSFSR Ministry of Health, Leningrad]

[Abstract] Therapeutic trials were conducted on 110 patients with cervical cancer to evaluate HLI following 1 to 2 injections per day, direct administration of 20×10^3 to 3×10^6 U for 10 days. The patient cohort encompassed cases with in situ carcinoma, micrometastases, and metastases who were monitored by a variety of colpomicroscopic, cytologic and histologic

techniques. Direct, dose-related destructive effects on the lesions were observed with recovery of normal epithelial cover in some cases. Marked histologic improvement was obaained in 45 patients, moderate in 44, and absence of improvement was noted in 21 cases. Complete elimination of histological evidence of a malignancy was noted in 31 patients (28.1%), of whom 26 were patients with carcinoma in situ, and 5 with micrometastases. On the basis of these findings, it appears that HLI is most promising in patients with carcinoma in situ and micrometastases. Figures 3; tables 1; references 6: 4 Russian, 2 Western.

12172/9835
CSO: 1840/379

UDC 615.339:578.245].015.25:[615:919:579.861

ANTITOXIC ACTIVITY OF INTERFERON PREPARATIONS

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 9, Sep 85 (manuscript received 22 Feb 85) pp 665-668

[Article by V.S. Zuyeva, S.B. Pashutin, V.P. Kuznetsov, N.Ya. Spivak and I.V. Korobko, Scientific Research Institute of Epidemiology and Microbiology imeni N.F. Gamaleya, USSR Academy of Medical Sciences, Moscow]

[Abstract] A decrease has been noted in the cytopathic activity of staphylococcus α-toxin in a culture of Z cells upon addition of interferon to the culture fluid. The number of mice dying following exposure to α-toxin has been shown to decrease upon administration of interferon. This article studies the antitoxic effect of human leukocytic interferon (ChLi) preparations of various levels of purity, as well as human immune and recombinant interferon using the model of the hemolytic activity of staphylococcus α-toxin. The antitoxic effect of human leukocytic interferon, synthesized in a suspension culture of leukocytes and human immune interferon, obtained by induction of a mononuclear fraction from donor blood with staphylococcus enterotoxin A, is directly proportional to the antiviral activity of the preparations. The protective effect was stronger, the less the hemolytic activity of the toxin. The antitoxic effect of the human immune interferon was more clearly expressed. The antitoxic effect is apparently not produced by the interferon itself, but rather by additional substances synthesized by the blood cells in the process of interferon production, particularly the entire spectrum of lymphokines. Highly purified and concentrated leukocytic interferon and recombinant interferon had no antitoxic activity. Neutralization of the antiviral action of one human leukocytic interferon preparation with antiinterferon γ gobulyn did not decrease the antitoxic effect of the preparation. References 8: 7 Russian, 1 Western.

6508/9835
CSO: 1840/291

UDC 615.281.8.015.44:578.245.04

INTERFERON-INDUCING ACTIVITY OF TILORONE HYDROCHLORIDE

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 9, Sep 85 (manuscript received 18 Jun 84) pp 668-671

[Article by E.B. Tazulakhova, N.N. Amitina and F.I. Yershov, Institute of Virology imeni D.I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] Tilorone, 2, 7-bis-2-(diethylaminoethoxy)-9-fluorenone, can induce the formation of interferon upon oral administration and has clear antiviral activity against many DNA- and RNA-containing viruses. This article studies the biological activity of tilorone synthesized at the Institute of Physics and Chemistry, UkSSR Academy of Sciences, Odessa. Tilorone was administered to animals i/m, intraperitoneally and orally. Regardless of the path of administration, the peak of production of interferon in the blood occurred 18 to 24 hours after administration. Maximum interferon production was achieved by oral administration of 400 mg/kg body mass, which produced titers of 1280-2560 units per ml. Tilorone is thus equal in interferon-inducing properties to similar imported preparations, or possibly more active in induction of interferon at lower doses. The rapidity of induction of interferon in the intestines was not anticipated. Figures 1; references 11: 2 Russian, 9 Western.

6508/9835
CSO: 1840/291

UDC 616.98:579.861.2]-085.339:578.245

SUPPRESSION OF DEVELOPMENT OF STAPHYLOCOCCUS INFECTION BY INTERFERON

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 11, Nov 85 (manuscript received 7 Feb 85) pp 863-868

[Article by V.S. Zuyeva, V.P. Kuznetsov, N.Ya. Spivak, L.M. Avakyan, A.I. Treshinskiy, O.A. Dmitrenko, D.L. Belyayev, V.V. Smirnov and V.D. Solovyev, Scientific Research Institute of Epidemiology and Microbiology imeni N.F. Gamaleya, USSR Academy of Medical Sciences; Institute of Microbiology and Virology imeni D.K. Zabolotnyy, UkSSR Academy of Sciences; Hospital Number 14, Kiev]

[Abstract] A study was made of the effect of interferon on staphylococcus infection in experiments on mice. Administration of mouse serum interferon 24 hours before infection, simultaneously with infection or 24 hours after infection decreased the number of staphylococci in the mouse kidneys. Two doses of interferon separated by two days helped to eliminate staphylococcus from the kidneys, normalized the delayed hypersensitivity reaction, restored the capability of spleen cells to produce interferon, and increased

the phagocytic activity of peritoneal macrophages. Clinical studies also indicated that the addition of α-interferon to antibiotic therapy of patients with purulent-septic staphylococcus infections increased the effectiveness of treatment. Improvement was noted in the clinical course of the disease, with normalization of general biochemical blood indicators and elimination of staphylococcus from the blood and inflammation foci. Several case histories are presented. Figures 3; references 22: 5 Russian, 17 Western.

6508/9835
CSO: 1840/293

UDC 615.332:577.182.54].015.2:615.276.4].015.46:612.017.1.014.46:615.371:579.843.95

EXPERIMENTAL MULTIFACTOR STUDY OF INFLUENCE OF DOXYCYCLINE AND GLUSOAMINYL-MURAMYL DIPEPTIDE ON PRIMARY IMMUNE RESPONSE TO TULAREMIA VACCINE STRAIN ANTIGENS

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 5, May 85 (manuscript received 6 Dec 84) pp 360-364

[Article by A.V. Nikitin, T.M. Andronova, L.P. Kovalenko, V.M. Fishman and M.G. Sheptovitskaya, All-Union Scientific Research Institute of Antibiotics; Institute of Bioorganic Chemistry, USSR Academy of Sciences, imeni M.M. Shemyakin, Moscow]

[Abstract] Combined applications of antibiotics and immunomodulators can improve the effectiveness of prevention and treatment of infectious diseases. This article studies the influence of combined application of doxycycline and glucosaminylmuramyl dipeptide (GMDP) on the primary immune response to a vaccine strain of tularemia in multifactor experiments onmmale white mice. Mathematical processing of the experimental data was used to obtain second order equations describing the cellular and humoral immune response of the animals. It was found that GMDP has a clear stimulating effect on the development of both cellular and humoral immunity with doxycycline over a broad dose range. Precise quantitative characteristics were obtained of the optimal dose-time regimens for combined application of GMDP and doxycycline. References 4: 1 Russian, 3 Western.

6508/9835
CSO: 1840/288

UDC 615.277.3:579.852.12:577.112.853].015.46:612.017.1

CHANGE IN NATURAL IMMUNITY OF MICE UPON ADMINISTRATION OF BLASTOLYSIN

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 6, Jun 85 (manuscript received 25 Dec 84) pp 442-446

[Article by I.B. Shepeleva, N.S. Zakharova, T.N. Remova, I.G. Bazhanova, I.B. Sorokina and I.G. Bogdanov, Central Scientific Research Institute of Vaccines and Sera, imeni I.I. Mechnikov, Moscow

[Abstract] Natural glycopeptide such as blastolysin, a glycolipid preparation extracted from the cell wall of L. bulgaricus, with clear antitumor effect and high adjuvant properties, is of interest for stimulation of natural immunity. This work studies the influence of blastolysin on the resistance of animals to various bacterial infections. The influence of blastolysin on anti-infectious resistance was studied on models of typhus muscularis and experimental pertussoid meningoencephalitis in mice, infected with a virulant culture of Salmonella typhimurium strain 15 or by intracranial administration ofaa neurotropic virulent culture of Bordetella pertussis. All doses of blastolysin increased the resistance to S. typhimurium by factors of 10 to 33, depending on dose. The changes of nonspecific resistance to B. pertussis were different. When infected on the seventh day after administration of the preparation, the resistance of the mice was 4 to 11 times higher for all doses. At other times following administration, there was a tendency toward, or even a reliable decrease in, resistance. Blastolysin activates enzymatic activity of peritoneal macrophases, depending on time and method of administration and dose. The optimal protective effect is provided by intraperitoneal administration of 100 μg of the preparation to the mice. Figures 2; references 11: 6 Russian, 5 Western.

6508/9835
CSO: 1840/289

UDC 612.017.1

INFLUENCE OF BACILLUS MEGATERIUM H ON IMMUNE RESPONSE TO HETEROLOGIC ANTIGEN IN MICE

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 48, No 1, Jan-Feb 86 (manuscript received 16 Dec 83) pp 77-81

[Article by D.G. Zatula, G.S. Lisovenko and T.A. Syadro, Institute of Problems of Oncology, UkSSR Academy of Sciences, Kiev]

[Abstract] There is great interest in the restoration of the immune status of a tumor-damaged organism by means of products of microbial origin or microbial cell components. There is particular interest in microorganisms

containing antigen determinants common with malignant tumor cells, including the saprophytic bacillus B. megaterium H. A therapeutic or preventive antitumor effect may be related to microbes which are cross-reactive with tumor-associated antigens. Mice immunized with B. megaterium H cells have manifested a reliable increase in lymphyocyte antitumor activity. This article studies the immunologic reaction of mice receiving whole B. megaterium H cells or their morphologic structures to heterologous thymus-dependent antigen in reactions allowing cellular and humoral immune response to be determined. It was found that the B. megaterium H cells containing antigen determinants in common with the tissues of malignant tumors, like live tumor cells, had an immunodepressant effect on the immune response to the heterologic antigen, manifested both in suppression of the delayed hypersensitivity reaction mediated by the T immunity system and in suppression of the number of antibody-forming and rosette-forming cells, reflecting the status of the B immunity system. The cytoplasm substance of B. megaterium H had a similar immunodepressive effect, while cell wall preparations had an immunostimulating effect on all characteristics studied. Cell walls inhibited appearance of tumors for 60 to 70 days, whereas the cytoplasm stimulated their development. References 14: 9 Russian, 5 Western.

6508/9835
CSO: 1840/286

UDC 616.211-002-009.86-085.849.19-036.8-07:616.16

MICROCIRCULATION IN PATIENTS WITH VASOMOTOR RHINITIS: CIRCULATORY DYNAMICS BEFORE AND AFTER LASER TREATMENT

Moscow VESTNIK OTORINOLARINGOLOGII in Russian No 6, Nov-Dec 86
(manuscript received 11 Mar 86) pp 63-66

[Article by V.F. Filatov, doctor of medical sciences, and M.V. Kalashnik, Chair of Otorhinolaryngology, Kharkov Medical Institute]

[Abstract] A study was conducted on microcirculatory changes in patients with vasomotor rhinitis, including 85 patients with the infectious-allergic form and 75 with the neuroautonomic. Assessment of a number of parameters demonstrated circulatory complications. Transcapillary exchange was increased, as demonstrated by tests involving I-131 labeled hippuran, while examination of conjunctival vessels revealed marked deviations from the norm. In the latter case, 63.5% of the patients presented with dilatation of the conjunctival arterioles, 40% with perivascular edema and 71.7% with venular sacculation. The patients were treated with He-Ne laser (0.6328 μm, 12 J/m^2, cumulative dose 120-180 J/m^2 after 9-13 treatments) which resulted in marked circulatory improvements with 2-3 treatments. Eventually, stable microcirculatory improvements were obtained in 67% of the patients, pointing to the usefulness of this laser modality in the management of vasomotor rhinitis. Figures 1; references 15: 14 Russian, 1 Western.

12172/9835
CSO: 1840/318

UDC 616.21/.28-039:615.849.19]+615.849.19.03:616.21/.28-089

LASER COAGULATION IN OTORHINOLARYNGOLOGY

Moscow VESTNIK OTORINOLARINGOLOGII in Russian No 6, Nov-Dec 86
(manuscript received 26 Mar 86) pp 68-72

[Article by M.S. Pluzhnikov, professor, and Yu.D. Berezin and B.S. Ivanov, candidates of medical sciences, V.M. Zhurba, Ye.Yu. Glukhova, candidate of medical sciences, M.M. Kull, A.M. Gagauz and L.V. Kolotilov, Chair of Otorhinolaryngology, 1st Leningrad Medical Institute imeni Academician I.P. Pavlov]

[Abstract] A review is presented of the use of Nd:YAG laser in the treatment of a number of conditions of the nasal conchae, larynx and the external ear. Coagulation by the Nd:YAG laser was attained with fiber optics with infiltrating anesthesia in the case of papillomas, angiofibromas, angiomas and scar tissue. Two to 3 coagulations at 7-10 day intervals resulted in complete regression in most cases in another 7-10 days. The use of Nd:YAG laser in otorhinolaryngology offers the advantages of access to otherwise inaccessible locations and relative freedom from complications. References 6: 5 Russian, 1 Western.

12172/9835
CSO: 1840/318

UDC 616-006-072.1:621.375.826

IMMEDIATE THERAPEUTIC RESULTS IN CANCER PATIENTS WITH SOVIET ENDOSCOPIC RADUGA Nd:YAG LASER

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 12, Dec 86
(manuscript received 19 Feb 85) pp 58-60

[Article by Yu.P. Kuvshinov, B.K. Poddubnyy, V.V. Veselov, O.N. Yefimov, B.N. Malyshev, V.A. Salyuk and A.V. Ivanov, All-Union Oncological Scientific Center, USSR Academy of Medical Sciences, Moscow]

[Abstract] Therapeutic trials were conducted with the Soviet endoscopic Raduga Nd:YAG laser operating at power outputs approaching 40 W in the management of 5 patients with gastrointestinal tumors. The immediate results were highly satisfactory in terms of patency restoration in the absence of any complications. Further studies shall be conducted to optimize treatment procedures and to assess late results obtainable with the Nd:YAG laser. References 10: 5 Russian, 5 Western.

12172/9835
CSO: 1840/379

UDC 591.18:577.37:599.537+615.211

ELECTROCORTICOGRAPHS (ECoG) OF BOTTLENOSE DOLPHIN (TURSIOPS TRUNCATUS) UNDER BARBITURATE ANESTHESIA

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 22, No 6, Nov-Dec 86 (manuscript received 4 Nov 84) pp 590-593

[Article by L.M. Mukhametov and A.Ya. Supin, Institute of Evolutionary Animal Morphology and Ecology imeni A.N. Severtsov, USSR Academy of Sciences, Moscow]

[Abstract] Five Black Sea bottlenose dolphins (Tursiops truncatus) were monitored for ECoG patterns in relation to the depth of nembutal anesthesia and EKG and respiratory activities. Initially, anesthesia elicited ECoG syncrhonization with amplitude increase, with the frequency gradually shifting to the delta-frequency band. If sigma spindles were present in a given lead with a frequency of 10-16 Hz they constituted a predominant pattern in the initial stages of synchronization. In all cases, synchronization developed bilaterally. Following maximum delta synchronization, the amplitude of the potentials diminished until no further ECoG activity was recorded. The gradual loss of reflex activity was accompanied by a decrease in the respiratory rate, with the last inspiration/expiration recorded 2-5 min before the disappearance of ECoG activity. EKG activity was detected for some time after the disappearance of ECoG activity. Decreased respiratory activity was noted with the onset of ECoG syncrhonization, indicating that, in dolphins, respiration is not a purely voluntary process but represents a considerable degree of automation. Figures 1; references 11: 2 Russian, 9 Western.

12172/9835
CSO: 1840/372

UDC 591.18:599.50

STRUCTURAL AND FUNCTIONAL PROPERTIES OF CETACEAN BRAIN

Moscow USPEKHI SOVREMENNOY BIOLOGII in Russian Vol 102, No 5, Sep-Oct 86 p 257

[Article by A.Ya. Supin]

[Synopsis] A number of interesting differences in cetacean brain were found in contrast to the brain of land-based mammals: unusual arrangement of the sensory projection sites of the brain core; unusual specialization of the acoustic centers able to perceive and analyze extremely short and often repeated acoustic signals of the type of detection signals; singe-hemispheric sleep. These data define more precisely and expand the theory on the range of possible adaptable changes in the brain of the mammals.

12999/9835
CSO: 1840/316

HEART TRANSPLANT

Moscow PRAVDA in Russian 30 Oct 86 p 6

[Article by O. Frantsen: "A Risk to Save a Life"]

[Text] We have already informed you in a previous issue of this newspaper that Soviet physicians have successfully performed a surgical heart transplant. Yesterday our correspondent visited the clinic where the surgery took place.

In my opinion, a most surprising aspect of the heart transplant procedure is that it has not taken place any sooner. For a long time we have been hearing about this kind of surgery performed abroad. At first, we were skeptical about the advantages of heart transplantation, and then we were perplexed as to whether or not this kind of surgery could be included in our surgeons' repertoire. The answer to this question was not simple.

The heart is an organ which, in the past, has been considered the repository of the human soul. Subsequently, it has been thought of as simply a muscular pump. Today, the heart has been placed at the center of complex and conflicting matters, among them moral issues, which are even more disturbing than the strictly medical ones.

A heart that is to be successfully transplanted must be taken from a brain-dead individual who cannot be expected to survive. From a purely arithmetic point of view, the advantages of a heart transplant are quite obvious. Out of the two doomed people, one is going to be returned to a fullfledged life. However, people are not adding machines. Humans must overcome a serious psychological barrier, and be resigned to the thought that the last spark of life has been extinguished, however useless for its owner. The fact remains that it is impossible to be at peace with the reality that there remain sick, doomed people, some of whom might still have been saved. Left behind are relatives, left without the most important thing--hope...

Many medical problems have been already solved. Methods, equipment and medications have become more reliable. Qualified Soviet surgeons have perfected the techniques of this complex surgery. There exists now a reliable basis for better survival expectation than in three previous heart transplants which ended in failure.

This surgery began at 5:00 P.M. Heading the team of surgeons was V. Shumakov, director of the Scientific Research Institute of Transplants and Artificial Organs of the USSR Ministry of Health and a corresponding member of the USSR Academy of Medical Sciences. Next door to the operating room, two men lay, seemingly lifeless. One of them was to be the donor, a young, twenty-year-old man, a victim of a car accident. A special commission had determined that his brain was dead. The recipient, a 32-year-old man, Nikolay Shishkin, had a hopelessly ailing heart. His flabby heart muscle was becoming dangerously tired as it pumped life-giving blood. First, the physicians removed the recipient's worn-out heart, leaving a frightening emptiness in the chest cavity. Now his life was supported by an artificial heart. In the next step, the surgeons removed the donor's heart, which had been kept in his body until the last moment in order to preserve the vitality of the heart. Before placing the donor's heart in its new "home", the physicians cooled it to make it even better preserved.

Then, the blood vessels of the donor's heart were connected with those of N. Shishkin's. In the next stage, the heart was rewarmed and excited by an electric shock. As a result of these two precedures, it began to beat again. Then, the recipient was given a substance to enable his blood to clot again. Soon after, the patient was disconnected from life support equipment, and transferred to a recovery room. There, he was connected by tubes and wires to a diagnostic instrument continuously monitoring his vital signs. Understandably, all of the potentially essential workers of the Institute remained on duty and continued to stay for six hours after the surgery, despite the approaching midnight hour.

At night, Nikolay regained conciousness, but was not able to talk until one day later, mainly due to a breathing tube in his trachea. The tube was obstructing his speech. The monitoring instruments indicated that the transplanted heart was working normally, and that the recipient was feeling fine. Therefore, the doctors thought that Shishkin would be able to give his first interview to the "Pravda" reporter.

Nikolay had told us that he came from the city of Vladimir, where he used to work as a driver, but for the past five years he was unable to keep up with his job and was laid off on grounds of disability. Lately, he had been confined to bed and was getting worse. A heart transplant was his only hope. At the time of the interview, he was feeling quite well.

However, at the end of this interview, which had taken only a few minutes, he became obviously tired. His eyelids began to droop, and I was afraid that he was seeing me only in his dreams. I stopped asking him questions, and my wish to him was get well soon.

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UNIQUE DIGITAL RADIOLOGICAL INSTRUMENT

Moscow IZVESTIYA in Russian 28 Jan 87 p 8

[Article by B. Konovalov, scientific correspondent of "Izvestiya": "Science in Service of Health. Harmless Rays"]

[Text] For the past two years, the scientists at the All-Union Scientific Research Center for Protection of the Health of Mother and Child, in Moscow, have successfully tested a unique, digital x-ray instrument.

This instrument was designed by a group of specialists of the Institute of Nuclear Physics of the Siberian Department, USSR Academy of Sciences, a group headed by A.G. Khabakhpashev, doctor of physics and mathematical sciences. During an examination, this instrument allows a reduction in radiation dosage 30 to 100 fold compared to the usual x-ray apparatus! Thanks to this instrument an x-ray examination has become absolutely harmless even for pregnant women.

Outwardly, the principle of operation of the instrument looks simple. An attachment on the standard tube "cuts out" a narrow, 1 mm diameter band from the regularly produced rays. This narrow band of rays is focused on a mobile part of the instrument, and, while it moves vertically, it scans that part of the patient's body which needs to be examined.

An especially sensitive detector permits the reduction of the necessary dose of radiation. Normally, in routine x-ray examination, a photofilm is used for this purpose. But the Novosibirsk physicists have applied an instrument, called multielement, proportional cameras, which are widely used in scientific experiments. These are more sensitive than regular film, and therefore can be used at a lower radiation dose, and still give the information in which the physicians are interested. The microcomputer "Electronica-60" interprets the x-ray data, registered in numerical code, and converts them into black and white or color pictures on the display screen. If necessary, the magnetic tape on which the "x-ray picture" has been recorded can be replayed again and again.

"We are very satisfied with the new instrument. We have already established routine procedures with the instrument--and it works fine. We do not have to worry about imposing a health risk on the pregnant woman and her fetus during x-ray examination. This is of great help when predicting the outcome of delivery and choosing the right strategy in complicated cases. It is of the utmost importance to have production models of this instrument available soon, to all of the big health centers, of all the regions of our country," says the manager of the x-ray department of the All-Union Scientific Research Center for Protection of the Health of Mother and Child, A.I. Volobuyev, M.D.

The City of Novosibirsk is to be second only to Moscow, in having the new x-ray instrument available. Soon, the physicists will turn it over to Novosibirsk's Oblast local hospital. Experimental checks of lungs and stomach in the newborn have been already conducted with the instrument.

Right now, the Nuclear Physics Institute of the USSR Academy of Sciences, in cooperation with the Production Association "Mosroentgen", are getting ready for mass production of an industrial prototype of the new, digital x-ray apparatus.

Several firms from abroad have already placed orders for the Novosibirsk physicists' x-ray instrument, which is unique in the world.

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SPECTROTHERMOGRAPHY: NEW DIAGNOSTIC TECHNIQUE

Moscow ADVANCES OF SCIENCE AND TECHNOLOGY in English No 19, 5 Oct 86 pp 1-3

[Text] Soviet medical specialists were the first in the world to use the ability of liquid crystals to change their color dependent on the temperature of the surface they are applied to for diagnosing acute abdominal conditions. Spectrothermography is a technique used to diagnose disorders of internal organs by applying films covered with liquid crystals. It enables specialists to find out the first symptoms of inflammation quickly and with a great degree of precision. Read the following article by Dr. Vassili Ivanov (Medicine) and Dr Iza Gorina (Chemistry).

Films Capable of Changing Their Color in Response to Temperature Changes

A rise in the body's temperature has long been considered a symptom of a disease's onset or its earliest stage. If the temperature is measured conventionally, i.e., by a thermometer, it can give the physician only a basic idea on the thermal balance inside the body without indicating the focus of inflammation or its size. This problem was partly resolved by the development of super-sensitive instruments registering thermal fluctuations, as well as by radioisotopic and ultrasonic equipment and CAT scanners used to examine one stratum of the organ after another. Yet, all those devices are too sophisticated and large for mass checkups.

The new stage in diagnosing acute conditions in the internal organs was triggered by Soviet experts' discovery of some spectrothermal properties of liquid crystals (cholesterol-type), especially cholesterol esters. When heated, they are capable of changing their color from red to violet under temperature fluctuations from 1.5 to 2.5 C. That was what made it possible to use them in diagnosing acute abdominal conditions. Suffice it to place a transparent plastic film covered with liquid crystals on the abdomen and a multicolor spot of the inflammation focus will appear on its surface.

Express Diagnosis

Clinical medicine uses over 80 techniques to diagnose acute abdominal conditions, but they cannot yield exhaustive enough information on the location of the inflammation focus or degree of morphological changes occurring in the affected organ. Besides, they are not enough for the physician in charge to control treatment efficiently. Spectrothermography makes it possible to cope with all those problems.

Thus, it is often hard to determine the focus of inflammation by the very first symptoms of acute appendicitis (one of the commonest abdominal disorders). The pains usually occur in the upper part of the abdomen, whereas the inflammation affects the vermiform appendix itself. Sometimes the symptoms may be misleading, and the physician is likely to diagnose, say, pneumonia.

Soviet specialists have obtained a film on which appendicitis corresponds to the blue-violet field on the thermal indicator of the lower part of the abdomen. The parameters of those fields depend on the degree of inflammation. At the initial stage, the area affected by inflammation amounts to about 20 square centimeters. At a later stage, it may be several times larger. Such a rapid proliferation of heat indicates an acute phase of the disease, i.e., purulent appendicitis. Spectrothermography is especially effective at the initial stage of the disease, that is, when the symptoms of inflammation are still weak or when the position of the appendix is unusual. Besides, this technique makes it possible to diagnose the disease in middle-aged patients, when its development occurs against the background of many other conditions.

Spectrothermography also provides extra information when added to an x-ray of the gall bladder. It is also most useful in diagnosing pancreatic disorders which are the third commonest--after appendicitis and cholecystitis. The pancreas is located deep in the abdomen, next to the stomach, duodenum and liver. The symptoms of those organs' diseases are similar, that is why erroneous diagnoses are so common. In fact, a wrong diagnosis might prove especially dangerous in cases of acute pancreatitis (inflammation of the pancreas) followed by a grave complication--peritonitis--when immediate surgery is required. In such a case thermography makes it possible to determine the exact operation field.

In some cases the films reveal post-operational inflammations when the patient's physical condition is good, his body temperature normal and tests reassuring. In fact, it indicates the presence of some concealed focus of inflammation fraught with danger of another relapse.

The new diagnosing technique has been tested thoroughly at Soviet clinics and is now being applied to the practice of medicine. Naturally, thermography cannot replace x-rays or endoscopy, but it certainly supplements them. Spectrothermography is effective and painless, and it can yield sufficient information on the disease within the shortest time possible. There are no known contraindications to it. Besides, the spectrothermal films have many advantages over other diagnostic techniques: they are light and cheap, and they can be used many times and in different situations, from geological expeditions to space missions.

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NYSTAGMUS IS CURABLE

Moscow ADVANCES OF SCIENCE AND TECHNOLOGY in English No 19, 5 Oct 86 pp 1-3

[Article by Professor Eduard Avetisov, deputy director of the Moscow Helmholtz Institute of Eye Diseases and Fellow of the International Academy of Ophthalmology]

[Text] Nystagmus is an eye disorder implying rapid involuntary movements of the eyes that may be from side to side, up and down or rotatory. It is one of the most common causes of poor sight. Not long ago specialists were unanimous in their opinion that nystagmus was incurable. Today the studies carried out at the Moscow Helmholtz Institute of Eye Diseases show that most of nystagmus patients can have their sight corrected.

What is the nature of nystagmus?

The eye is the most mobile human organ. It is in perpetual motion even when it is fixed on something and looks still. These micromovements, which can be registered only by very sensitive devices, play an important part in visual perception. In fact, they enable the eye to scrutinize the most informative parts of an object whose projection on the retina is shifting perpetually. If special devices are used to immobilize the object's projection, the eye ceases to disinguish it clearly.

There is a small depression in the retina at the back of the eye, known as the fovea, which is the area of the greatest acuity of vision. That kind of vision is called central. As for peripheral vision (i.e. projection on other parts of the retina), it is much less acute and is also known as lateral. Central vision makes it possible to study minute parts of the object in detail, and peripheral--to find one's bearing in space.

A sharp contrast between the fovea's vision and that of the peripheral retina is of paramount importance for the development of central vision and ability to fix one's eyes on the object in question. If the functioning of the fovea is upset straight after a baby's birth, when its vision grows entirely lateral, its central vision system's development will slow down drastically. As a result, the eyes fixed on some object will move 100 times faster than normal. This phenomenon is known as nystagmus.

What suffers most, is the accommodation system, a subtle neuromuscular mechanism enabling the eye lens to change its shape in order to distinguish all kinds of objects situated at different distances from the eye. A continuous alternation of clear and vague projections is essential for this self-regulating system: it stimulates the focusing of the lens. In case of nystagmus, when only vague images are projected on the retina, the development of the accommodation system is hampered.

This leads to a very important conclusion: the acuity of sight in nystagmus cases is lower than normal partly because of the anatomical changes occurring in the eye and partly because of the functional degradation of the central vision and accommodation systems. A vigorous stimulation of this activity may enhance the sharpness of vision and reduce the nystagmus symptoms. The slowing down of the eye movement achieved surgically may also correct the sight. That conclusion laid the foundations for the development of our new system of nystagmus treatment.

The actual treatment begins with the prescription of glasses or contact lenses to correct the optical defect of the eye. The second pair of glasses with more powerful lenses is often prescribed for doing work at a close distance, to make up for inadequate accommodation. The accommodation system can also be improved by special exercise, that is, alternation of increasingly powerful concave and convex lenses in the process of reading. This makes the muscle responsible for accommodation contract and relax, which certainly stimulates its work. To improve the nutrition of the eye tissues and stimulate the retina, we also resort to drugs, for instance, vasodilators, vitamin complexes and other medication.

The central vision system in nystagmus cases, deteriorated by relative passivity, can also be stimulated by light. The technique is as follows: a special device generates a bright light beam which excites the fovea. In this case laser treatment is most efficient.

To slow down the eye movements in nystagmus patients, we have developed an operation on the extrinsic muscles. It turned out that the central mechanism controlling the eye movements is helped by a peripheral system performing the same function. The active side-to-side movements of the eye observed in nystagmus cases are caused, to a great extent, by the irregular impulses generated by the peripheral system located in a certain part of the muscle. The idea of the surgery is to remove the part of the muscle containing that system and thus put an end to a flow of pathological impulses.

Exercises based on the visual feedback principle also do good to nystagmus patients. The patient can use a special device to see a magnified picture of his eyes on a video display, which makes the uncontrolled movement of the eyes very obvious. The patient is then asked to concentrate and slow down this movement by conscious effort, and he eventually succeeds. A sequence of exercises that follows consolidates the effect.

Over 400 patients have been treated at our Institute according to the new method, and two thirds of them had their sight acuity enhanced by 10 to 60 percent.

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NOVEL CONCEPT OF PATHOGENESIS OF ACUTE HEPATIC INSUFFICIENCY AND DEVELOPMENT OF RADICAL TREATMENT APPROACH: ORTHOTOPIC LIVER TRANSPLANTATION

Tbilisi SOOBSHCHENIYA AKADEMII NAUK GRUZINSKOY SSR in Russian Vol 124, No 1, Oct 86 (manuscript received 28 Sep 84) pp 185-188

[Article by A.M. Gagua and L.L. Gugushvili, Scientific Research Institute of Experimental and Clinical Surgery, Georgian SSR Ministry of Health]

[Abstract] Clinical cases and experimental studies were analyzed to arrive at a common pathogenetic features underlying acute hepatic insufficiency. The conclusion was reached that the underlying problem involved portal circulator abnormalities and retrograde inflow of blood via hepatic veins due to compression of the intrahepatic branches of the veins. On the basis of these considerations a radical approach to treatment was formulated, consisting of an orthotopic liver transplant. Initially, the donor liver is perfused via recipient's femoral A-V shunts, and then transferred into the vacated hepatic site and connected to the recipient's hepatic vessels. In this manner, extracorporeal preservation of the donor liver is avoided along with attendant ischemic changes. References 14: 1 Georgian, 13 Russian.

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STREPTODECASE MAGNETOPHORESIS IN TREATMENT OF POSTTRAUMATIC INTRAOCULAR HEMORRHAGES

Moscow VESTNIK OFTALMOLOGII in Russian Vol 103, No 1, Jan-Feb 87 (manuscript received 3 Dec 85) pp 51-54

[Article by L.V. Zobina and A.D. Romashchenko, Moscow Scientific Research Institute of Eye Diseases imeni Helmholtz]

[Abstract] Clinical trials were conducted on magnetophoresis of streptodecase in the treatment of posttraumatic intraocular hemorrhages in the case of

22 patients, ranging in age from 9 to 69 years. Each application of streptodecase (40,000 U/ml) required 7-10 min under the influence of a magnetic field. In early lesions, resolution was generally obtained after 5-8 treatments, whereas delay in administering therapy required 8-15 procedures. Complete resolution was obtained in 86.4% of the cases, and partial resolution in the remaining 13.6%. By comparison, complete resolution in cases in which streptodecase was administered by injection was seen in only 73% of the patients. An added advantage of magnetophoresis was the fact that this procedure precluded the development of allergic reactions, a complication usually encountered after 3-5 injections of the enzyme. Figures 2; references 3 (Russian).

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TESTING OF VARIOUS NUTRIENT MEDIA IN STUDIES OF ANTIBIOTIC SENSITIVITY OF BRUCELLA

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGYIA in Russian Vol 30, No 11, Nov 85 (manuscript received 8 Apr 85) pp 839-842

[Article by Ye.A. Gubina and T.A. Tolmacheva, Scientific Research Institute of Epidemiology and Microbiology imeni N.F. Gamaleya, USSR Academy of Medical Sciences, Moscow]

[Abstract] A study is made of the possibility of using the universal nutrient medium "unimikon-ch" (developed at the All-Union Scientific-Research Institute of Antibiotics--based on a "fermentolysate" biomass of microorganisms--and the All-Union Scientific-Research Institute of Biosynthesis of Proteins, Moscow) in determiantion of the sensitivity of brucella to antibiotics by serial dilutions in petri dishes, and also by the method of diffusion in agar using disks previously not used with brucellosis pathogen. Studies were performed by parallel inoculation of a culture of B. melitensis 565 in petri dishes with the medium containing 10, 15 and 20% microorganism biomass fermentolysate. The experiment showed that when 10% fermentolysate was added, the bruce-la grew very little even after 48 hours incubation. Better results were obtained at 15% fermentolysate. The use of 20% fermentolysate hindered filtration of the medium while achieving no better results than 15%. The method of diffusion in agar using disks is recommended for determination of antibiotic sensitivity of brucella with results of laboratory analysis recorded after 48 hours.

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COMPARATIVE EVALUATION OF SEVERAL METHODS FOR DETERMINING ANTIBIOTIC SENSITIVITY OF ANTHRAX MICROBE

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 11, Nov 85 (manuscript received 11 Mar 85) pp 845-847

[Article by V.A. Proskurina and N.P. Buravtseva, Scientific Research Plague Control Institute of the Caucasus and Transcaucasus, Stavropol]

[Abstract] A study was performed on the degree of correlation of the results of the classical method of serial dilutions on a dense nutrient medium and the disk-diffusion method with semiquantitative interpretation of results. Several nutrient media were tested which can be used for determination of the sensitivity of anthrax microbe strains to antibiotics. The studies showed a clear correlation of data obtained by serial dilutions and the disk method. All 25 strains of anthrax microbe were found to be sensitive to all 13 antibiotics. The mean effective concentrations determined on "unimikon-ch" [medium] were in most cases similar to values obtained on Hottinger agar, or differed by one or two dilutions. "Unimikon-ch" and AGV [medium developed at Daghestan Scientific-Research Institute] were found to be good growth media for the anthrax microbe, and can be used to determine antibiotic sensitivity by either method. References 6: 5 Russian, 1 Western.

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INFLUENCE OF BACTERIA ON ORGANOTIN POLYMER ANTIFOULING COATING IN SEA WATER

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 47, No 5, Sep-Oct 85 (manuscript received 7 Jun 84) pp 3-7

[Article by Ye.I. Andreyuk, Zh.P. Kopteva, S.B. Yanover, A.Ye. Kopteva, V.V. Zanina and V.F. Mishchenko, Institute of Microbiology and Virology, UkSSR Academy of Sciences, Kiev; Simferopol State University]

[Abstract] A study was made to determine the population of ecologic-trophic groups of bacteria on the surface of antifouling coating containing an organotin polymer based on tributyltin oxide and to determine the significance of bacteria in the leaching of this toxin from the coating into sea water. Microorganisms found on the surface included ammonifying denitrifying, carbohydrate-oxidizing, manganese-oxidizing bacteria and bacteria growing on media containing colophony and tributyltin oxide. Throughout the experiment the population of bacteria capable of growing on the medium containing tributyltin oxide decreased. Pseudomonas,

Flavobacterium and Vibrio were present. The bacteria influenced the rate of leaching of the biocide from the coating. Individual and associated cultures not only facilitated liberation of organotin into the sea water, but also maintained the stability of the leaching process. Figures 5; references 9: 7 Russian, 2 Western.

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PHYSICAL-CHEMICAL PROPERTIES OF EXOPOLYSACCHARIDES OF METHYLOTROPHIC MICROORGANISMS AND POSSIBILITY OF THEIR UTILIZATION IN DRILLING SOLUTIONS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 47, No 5, Sep-Oct 85 (manuscript received 15 Feb 85) pp 42-48

[Article by T.A. Grinberg, T.P. Pirog, Makhamed el Sayd, S.K. Botselko, V.V. Parkhomenko, V.Yu. Tretinnik, Yu.R. Malashenko and L.A. Kudra, Institute of Microbiology and Virology, UkSSR Academy of Sciences, Kiev]

[Abstract] Microbial exopolysaccharides are widely used in the manufacture of drilling fluids and to increase the oil yield of formations. The major requirements for drilling-fluid polysaccharides are good solubility in water, high viscosity of solutions, stability with high salt concentrations, pseudoplasticity over a broad range of temperatures and pH, and resistance to microorganisms. This article presents a study of the physical and chemical properties of exopolysaccharides synthesized from C_1 compounds to determine the possibility of their use as drilling-fluid additives. The exopolysaccharides, synthesized with mixed and pure cultures of methylotrophic bacteria, are acid heteropolysaccharides resistant to biological decomposition, thermally stable and comparable to xanthane in rheologic properties. The most promising stabilizers for clay drilling solutions are biopolymers obtained from methylococcus species on methane, or an association of Pseudomonas sp., Flavobacterium sp., Micrococcus sp., Bacillus subtilis, Atcaligenes faecalis on methanol. The use of methylotrophs for biosynthetic production of polysaccharides can expand the raw materials base of microbiological production by utilizing nonnutrient raw materials of stable composition. Figures 4; references 17: 11 Russian, 6 Western.

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USE OF METHYLOMONAS RUBRA CULTURE TO DECREASE METHANE CONTENT IN LONG-WALL FACE

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 47, No 5, Sep-Oct 85 (manuscript received 29 May 84) pp 97-98

[Article by D.V. Chernyshenko, V.I. Myaken'kiy, A.P. Petukh, P.S. Litvinov, and Yu.R. Malashenko, Institute of Microbiology and Virology, Ukrainian Academy of Sciences, Kiev; Institute of Geotechnical Mechanics, Ukrainian Academy of Sciences, Denepropetrovsk]

[Abstract] The microbiological method is a promising means of decreasing methane content of goaves (long-wall face). The authors' institutes have experimentally tested this method in order to establish the possibility of using Methylomonas rubra cultures under mine conditions. The sector used in the steady was a long-wall goaf working a seam 0.7-0.8 m thick, dip angle 6 to 8 degrees, long-wall length 230-270 m, roof controlled by full collapse, mean daily production 43 tons. Microbe suspensions were diluted with process water, adjusted to pH 5.5 and sprayed on the surface of the walls. The relative gas content decreased from 22 to 14 $m^3/t \cdot day$, i.e., by 36.6%, over 6 days, then remained stable at the lower level. Figures 1; references 4 (Russian).

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UDC 579.852.11.222+579.852.11.25+632.937

LECITHINASE AND HEMOLYTIC ACTIVITY OF CRYSTALLOGENIC BACTERIA

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 47, No 6, Nov-Dec 85 (manuscript received 8 Feb 83) pp 23-27

[Article by G.K. Androsov and I.A. Lavrinenko, Syktyvkar State University]

[Abstract] The pathogenicity of Bacillus thuringiensis for insects results from a number of factors, including protein crystals, thermostable β-toxin and phospholipase C or lecithinase. The purpose of this work was to determine the interrelationship between lecithinase and hemolytic activity and to select strains of B. thuringiensis with high lecithinase activity. The most active lecithinase producers were of the biotype dendrolimus. The best hemolytic properties were those of dendrolimus, finitimus and galleriae. The correlation coefficient of hemolysis with lecithinase activity was $+0.372 \pm 0.172$; the experimental value of the Student criterion was 2.16, theoretical value 2.07, indicating that there is a positive correlation of moderate force between hemolysis and lecithinase activity, as has been noted for other groups of microorganisms. Exposure to ionizing radiation

yielded mutants with high lecithinase activity from an initial strain with no such activity, indicating that the initial strains did contain the phospholipase C gene in an inactive state. The mutant M 14 of biotype galleriae can be used as a basis for effective biopreparations with good entomocidal properties. Figures 1; references 10: 8 Russian, 2 Western.

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EXTRACELLULAR PSEUDOMONAS AERUGINOSA ANTIGENS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 47, No 6, Nov-Dec 85 (manuscript received 30 Mar 84) pp 36-40

[Article by V.N. Shchetinina, Kharkov Scientific Research Institute of Microbiology, Vaccines and Sera]

[Abstract] The unavailability of effective means for prophylaxis and treatment of diseases caused by Pseudomonas aeruginosa requires a study of antigens of this pathogen to create and improve specific immunogenic preparations. One pressing problem in this area is the search for common antigens with protective effect against a broad spectrum of heterologous serotype strains. The authors' institute has obtained a Pseudomonas aeruginosa anatoxin based on extracellular substances. Immunization with this preparation provides protection against strains of several serotypes, indicating the presence of a common antigen. The purpose of this work was to establish the nature of the common extracellular antigen. Two were found: An O-antigen, a component of the external membrane of gram-negative bacteria, and a protein antigen. The protein antigen was used to immunize rabbits to produce immune serum, which formed a single precipitation line with the anatoxin and the immunogen. The reaction of immunodiffusion of the serum produced with a summary preparation of extracellular substances from 12 strains relating to various O-serotypes was used to determine the capability of the protein antigen to provide cross-immune reactions. One precipitation line was formed in all cases, indicating identity of the reacting antigens. The data indicate that the different strains produce a common extracellular protein antigen, probably the reason for the protective effect of the anatoxin preparation for heterologous serotypes. Figures 3; references 10: 4 Russian, 6 Western.

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PRODUCTION OF ANATOXIN IN CULTIVATION OF PSEUDOMONAS AERUGINOSA ON CASEIN NUTRIENT MEDIUM

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 47, No 6, Nov-Dec 85 (manuscript received 16 Apr 84) pp 40-43

[Article by L.G. Podgornaya and N.F. Dzyuban, Kharkov Scientific Research Institute of Microbiology, Vaccines and Sera]

[Abstract] A study was made of the use of a casein nutrient medium based on a casein acid-hydrolysate to produce a Pseudomonas aeruginosa anatoxin. The studies of cultivation of Pseudomonas aeruginosa on Marten's broth and the casein medium showed that the concentration of microbial cells increased on both media for 3 days, the growth rate on the casein medium varying with amine nitrogen content. Accumulation of the specific antigen on the casein medium also depended on the quantity of amine nitrogen, an increase to 150 mg% stimulating production of protective Pseudomonas aeruginosa antigen, though its level was lower than in the Marten's broth for the first two days. The casein medium is suitable for use, instead of Marten's broth, for production of pseudomonas aeruginosa anatoxin, optimal conditions being cultivation at 34°C, pH 6.8-7.2, amine nitrogen content at least 150 mg%, glucose content 1%. References 8: 7 Russian, 1 Western.

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STEEL CORROSION BY THIOBACILLUS THIOPARUS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 48, No 1, Jan-Feb 86 (manuscript received 16 Jul 84) pp 36-41

[Article by N.S. Antonovskaya, I.A. Kozlova and Ye.I. Andreyuk, Institute of Microbiology and Virology, UkSSR Academy of Sciences, Kiev]

[Abstract] A study is presented of the corrosion of steel Type 20 under the influence of T. Thioparus isolated from corrosive soil. A culture of acidophobic thionic bacteria isolated from soil near a main gas pipeline was purified and identified as T. Thioparus. Type 20 steel was exposed to a pure culture and a natural association of T. Thioparus and Pseudomonas sp for 90 and 400 days in unbuffered and buffered media. The activity of the cultures was judged from the quantity of S/SO^{2-}_4, formed upon oxidation of $S/S_2O^{2-}_3$. Elemental sulfur accumulated more rapidly and corrosion of steel plates occurred more intensively in the mixed culture. The corrosive properties of the medium with the bacteria were significantly greater than in the sterile control media. The corrosive activity of T. Thioparus results from the capability of the culture to oxidize thiosulfate to elemental sulfur

and sulfuric acid, thus increasing the corrosiveness of the medium. Attaching to the surface of the metal, the bacteria strengthen the electrochemical heterogeneity, causing local corrosion and pitting. Figures 5; references 14: 6 Russian, 8 Western.

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CSO: 1840/286

UDC 579.22

MICROFLORA OF FORMATION WATERS PARTICIPATING IN DESTRUCTION OF BIOPOLYMER SOLUTIONS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 48, No 1, Jan-Feb 86 (manuscript received 10 Aug 84) pp 41-46

[Article by A.Z. Gareishina, M.S. Matyshevskaya, I.P. Mavzyutova, R.I. Govzdyak, S.M. Akhmetshina, Ye.Ye. Levedeva and R.S. Giniyatullin, "Soyuznefteprom khim" Scientific-Production Association, Kazan; Institute of Microbiology and Virology, UkSSR Academy of Sciences, Kiev]

[Abstract] Recent studies have investigated the use of biopolymers to improve oil field production. The question of the resistance of biopolymers to formation microflora is quite important. This article studies the degree of destruction of biopolymers by the microflora of oil deposits and tests the bactericide formalane, which reduces the intensity of this process. Exopolysaccharide EPS_{10} was produced by Xanthomonas campestris 8162; EPS_{21} was synthesized by Cryptococcus laurentii. Aqueous solutions of biopolymers were prepared using formation waters Number 1 and 2 collected in various oil deposits in the Soviet Union. Specimens were inoculated on selective media to isolate ammonifying, sulfate-reducing, denitrifying, cellulose-decomposing (anaerobic and aerobic), thionic acid, butyric acid and ammonifying bacteria and bacteria oxidizing hydrocarbons under microaerobic conditions. Formalin at 250 mg/l did not change the general course of microbiological processes. Formalin with EPS_{10} merely accelerated the process of death of the bacteria. The presence of mineral substances and bacterial metabolites facilitates additional structuring of both the PES and the biopolymers produced by the bacteria which naturally inhabit the formation waters. This process is more rapid than adaptation of the bacteria to the additional carbon source. EPS_{10} is more resistant to decomposition in formation water Number 1 than EPS_{21}. Addition of formalin, by stabilizing or reducing the quantity of microorganisms, favorably influences the viscosity of the formation water but does not change the general direction of the process of biopolymer destruction. Figures 1; references 6: 4 Russian, 2 Western.

6508/9835
CSO: 1840/286

UDC 577.19:582.288

ANTIMICROBIAL ACTIVITY OF MYCOTOXINS

Kiev MIKROBIOLOGICHESKIY ZHURNAL in Russian Vol 48, No 1, Jan-Feb 86 (manuscript received 29 May 84) pp 71-77

[Article by S.N. Kharchenko, Ukrainian Agricultural Academy, Kiev]

[Abstract] Accumulating in feed substrates, mycotoxins influence the formation of feed microflora. Data on the antimicrobial activity of mycotoxins can therefore be used in the development of methods of biomonitoring of contamination of feed with certain species of fungi, as well as prediction of the contamination of feed substrates in certain regions by certain toxins. The purpose of this article was to study the antimicrobial activity of the most frequently encountered mycotoxins with respect to a broad group of test microorganisms representing various taxonomic groups, including bacteria, mycelial fungi and yeasts. The mycotoxins had varying selective antimicrobial activity for various microorganism species, and can be considered an ecologic factor influencing the microflora of feeds and acting as regulators of the metabolism, morphogenesis and differentiation of microbial populations in microbiocenoses. The species and strain differences in the sensitivities to mycotoxins of individual groups of fungi can explain the factors influencing the popualtions in feeds. Structural complexes of micromycetes were established as well as combinations of the toxic metabolites they form which can simultaneously contaminate feeds making veterinary-sanitary evaluation difficult and complicating the development of methods of control of alimentary mycotoxicosis of farm animals. References 13: 11 Russian, 2 Western.

6508/9835
CSO: 1840/286

UDC 576.8

MICROBIAL ACCUMULATION OF FINE-DISPERSION COLLOIDAL GOLD

Moscow IZVESTIYA AKADEMII NAUK SSSR: SERIYA BIOLOGICHESKAYA in Russian No 2, Mar-Apr 86 (manuscript received 24 Jan 85) pp 302-306

[Article by D.I. Nikitin, M.S. Oranskaya, A.S. Savvichev and P.V. Mikheyev, Institute of Microbiology, USSR Academy of Sciences, Moscow]

[Abstract] Studies were conducted on the deposition of fine-suspensions of colloidal gold (237-332 Å particle size) on 14 taxonomic groups of microorganisms, which revealed significant differences among the various groups. Both immobilized and free suspensions of the cells were equally effective in the accumulation of colloidal gold, with the slow-growing oligotrophs (Microcyclus, Renobacter, Seliberia, Hyphomicrobium) presenting as the most efficient biomass substrates for deposition. The more rapid growing eutrophic organisms (rhizobia, pseudomonads, spirilla) were somewhat less efficient. In both situations, only living cells provided a

biomass capable of accumulation of the dispersed gold particles. The study further demonstrated that only a few of the secreted metabolites favored the deposition, including the amino acids lysine, glutamic acid, arginine and cysteine. Proteins were less efficient in this respect, and fatty acids seemed to be ineffective. References 13 (Russian).

12172/9835
CSO: 1840/417

UDC 582.282.123.2.095:547.94

EFFECTS OF NUTRIENT MEDIUM COMPOSITION ON ALKALOID SYNTHESIS BY PENICILLIUM LANOSUM

Alma-Ata IZVESTIYA AKADEMII NAUK KAZAKHSKOY SSR: SERIYA BIOLOGICHESKAYA in Russian No 4, Jul-Aug 86 pp 39-43

[Article by N.Ye. Bekmakhanova, K.A. Tulemisova, L.M. Amirkhanova and A.K. Uspanov, Institute of Microbiology and Virology, Kazakh SSR Academy of Sciences]

[Abstract] The effects of a variety of nutrients on the production of alkaloids by Penicillium lanosum 947 were assessed in order to define optimal conditions for alkaloid yields. The primary alkaloid produced by P. Lanosum 947 has been identified as lanosine, which is shown to possess antibiotic activity against a variety of phytopathogenic fungi (Fusarium culmorum, F. oxysporum, F. oxysporum var. solani, Rhizoctonia solani, Botrytis cinerea, Helminthosporium sativum), as well as agents responsible for crop root-rot. Generally, lanosine is active in concentrations of 8-20 μg/ml. The submerged culture data showed that alkaloid synthesis was enhanced by DL-alanine, DL-phenylalanine, DL-leucine and DL-valine among the amino acids, as well as by mannitol (although higher biomass yields were obtained with sorbitol). The optimum concentration of KH_2PO_4 for lanosine synthesis was determined to be at 1 g/liter, with higher concentration having an inhibitory effect. Similarly, better lanosine yields were obtained with succinate than with tartrate in the medium. Tables 2; references 9: 5 Russian, 4 Western.

12172/9835
CSO: 1840/409

UDC 617.51-001-06:617-001-031.13-036.11-06:616.8-009.81-08

CORRECTION OF REFLEX FUNCTIONS IN ACUTE STAGE OF CEREBROCRANIAL TRAUMA

Moscow ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE in Russian No 10, Oct 86 (manuscript received 23 Jan 86) pp 40-45

[Article by V.V. Kuzmenko, D.I. Salnikov and A.Ya. Akhmed-Zade, Chair of Traumatology, Orthopedics and Military Field Surgery, 2nd Moscow Order of Lenin Medical Institute imeni N.I. Pirogov]

[Abstract] A case study analysis was conducted on 277 patients with cerebrocranial trauma to evaluate therapeutic efforts in relation to eventual recovery rate. The data demonstrated that one of the most effective components of the treatment regime consisted of special attention accorded to correction of reflex mechanisms, in conjunction with glucose-novocain infusions. In addition, extensive local novocain injections were carried out, as clinically indicated, to ensure local nerve blocks. In conjunction with conventional supportive measures, such efforts facilitated the success of brain surgery, reducing the mortality rate to 27.4%, versus a usual mortality rate of ca. 40% with this form of pathology. References 17 (Russian).

12172/9835
CSO: 1840/317

UDC 616.711-007.17-057:629.73

DEGENERATIVE, DYSTROPHIC CHANGES IN VERTEBRAL COLUMN OF FLIGHT PERSONNEL

Moscow ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE in Russian No 10, Oct 86 (manuscript received 24 Oct 85) pp 53-54

[Article by I.L. Anikin and M.D. Akiyev, Military Medical Academy imeni S.M. Kirov, Leningrad]

[Abstract] Radiological examinations were conducted on the vertebral column of 162 pilots (20-35 years old) and 79 ground personnel (18-25 years), which revealed degenerative and dystrophic changes in 34.2% of the gronnd personnel and in 79.7% of the 30-35 year old pilots, as well as in 45.1% of the 20-29 year old pilots. These observations demonstrate that this form of spinal pathology may arise as a result of physical stress as well as aging. Pilots with minimal pathology may continue with their occupational activities with proper modification, including avoidance of parachute jumps and catapulting on ground. In addition, annual examinations should include assessment of the vertebral column, and regular exercise therapy should be prescribed to prevent progression of spinal defects. References 3 (Russian).

12172/9835
CSO: 1840/317

Briefs

ANTI-AGING DRUG--Goethe once remarked that aging is a disease. And if a disease is impossible to eliminate, it can and should be controlled. Scientists at the Institute of Chemical Physics of the USSR Academy of Sciences and the Institute of Organic Synthesis of the Latvian SSR Academy of Sciences are convinced that premature aging can be prevented by antioxidants. Well-known in technology, these substances retard the aging of polymers, the resinification of fuels and the damaging of oils. More specifically, these antioxidants include derivatives of 1,4-digiaropyridine [sic]--structural analogues of several natural substances which prevent erythrocytes from breaking down, retard vitamin oxidation and are generally of great benefit for the organism. The preparations manufactured by the scientists have undergone initial testing on mice and fruit flies. The mice and flies were kept at a temperature of 25 degrees Celsius and compared with control groups of mice and flies. The effect exceeded all expectations--one diet, given in combination with an antioxidant, led to a 21 percent increase in life expectancy for the mice, while this figure was 29 percent for the fruit flies. Thousands upon thousands of checks are yet to come. [Text] [Moscow NAUKA I RELIGIYA in Russian No 11, Nov 86 p 13] 13287/9835

PROSTENON TK, PROSTAGLANDIN PRODUCT--Ten grams of prostaglandin were produced at the new biological products workshop at the Institute of Chemistry of the Estonian SSR Academy of Sciences. Pharmacists at a local plant are now using it to manufacture ten thousand ampules of prostenon TK, a valuable therapeutic which is helping physicians to combat bronchial asthma and liver failure. It is effective during operations on blood vessels of the heart. Shop manager Velma Pyaeva, senior engineer Rut Veimer and machine operators Yuri Spigel and Peter Kuznetsov spent many a sleepless night over glass retorts, flasks and tubes before finally coming up with the finished product, which costs over two thousand rubles a gram. "Prostaglandins are a series of complex compounds which are encountered in nature in living organisms", explains Yuri Soone, deputy director of scientific studies at the Institute of Chemistry of the Estonian SSR Academy of Sciences. "Our scientists have been working on a technology for their production for over a decade now, and have obtained up to fifty grams of the substance per year using experimental equipment. We are now on the verge of putting it into mass production. The biological products shop will produce up to one and a

half kilograms of this valuable therapeutic. Industrial plants will start manufacturing it only after the entire production process has been incorporated on an industry-wide scale. We ourselves will get to work on manufacturing the next important preparations. New products we have plenty of". [Text] [Moscow IZVESTIYA in Russian 20 Dec 86 p 2] 13287/9835

CSO: 1840/263

UDC B15471:61512-008.31:621.38(008.8)

ULTRASTRUCTURAL CHANGES IN CNS INDUCED BY ACUTE CANNABINOL INTOXICATION

Tbilisi SOOBSHCHENIYE AKADEMII NAUK GRUZINSKOY SSR in Russian Vol 124, No 1, Oct 86 (manuscript received 12 Oct 84) pp 189-191

[Article by L.P. Didmamishvili, Scientific Research Institute of Psychiatry imeni M.M. Asatiani, Georgian SSR Ministry of Health]

[Abstract] A toxicologic study was conducted on the effects of various concentrations of cannabinol (0.08-2 ml/kg of 5% solution) on the ultrastructure of various brain formations in rabbits. Electron microscopic data revealed extensive dose-related changes that were most pronounced with the highest dose. Basically, these changes consisted of destruction of the endoplasmic reticulum, agglomeration of ribosomes, dissolution of mitochondrial membranes, deterioration of synaptic structures, nuclei, and the Golgi apparatus. These changes were far more advanced in the cerebral cortex and were attributed to depression of metabolic activity.

12172/9835
CSO: 1840/340

UDC 616-092.9

MORPHOHISTOCHEMICAL RENAL CHANGES INDUCED BY EXPERIMENTAL STAPHYLOCOCCAL INTOXICATION

Tbilisi SOOBSHCHENIYA AKADEMII NAUK GRUZINSKOY SSR in Russian Vol 123, No 1, Jul 86 (manuscript received 6 Sep 84) pp 173-176

[Article by N.D. Chkholariya, N.B. Amiryan and N.Sh. Gotsadze, Institute of Experimental Morphology imeni A.N. Natishvili, Georgian SSR Academy of Sciences; Scientific Research Institute of Urology and Nephrology imeni A.P. Tsulukidze, GSSR AS]

[Abstract] Histochemical studies were conducted on the kidneys of male CBA mice injected with a sublethal dose of staphylococcal toxin, to assess the

real sequelae of staphylococcal toxemia. Within 3-6 h, congestion and point hemorrhages were evident in the kidneys, proceeding to dystrophic changes in 12-24 h. In addition to dilatation of glomerular capillaries and the appearance of glycogen, and extensive accumulation of neutral and--to a lesser extent--acid mucopolysaccharides, was evident. Five to 10 days after toxin administration, the dystrophic changes affected greater areas of the kidney, with the staining reactions for the neutral mucopolysaccharides, and especially the acid mucopolysaccharides, becoming much weaker. The mucopolysaccharide and glycogen staining reactions were virtually negative by day 20, the glomerular capsule showed contraction, along with pronounced congestion and hemorrhagic changes. Figures 3; references 4 (Russian).

12172/9835
CSO: 1840/1039

UDC 612.766.1:612.8:519.272

PHYSIOLOGICAL INDICATORS OF CENTRAL NERVOUS SYSTEM ACTIVITY DURING MENTAL ACTIVITY, OBTAINED ON BASIS OF MULTI-DIMENSIONAL STATISTICAL METHODS

Kiev FIZIOLOGICHESKIY ZHURNAL in Russian Vol 31, No 4, Jul-Aug 85 (manuscript received 10 Aug 83) pp 433-439

[Article by E. Otto, A.O. Navakatikyan, V.V. Kalnish and V.V. Gorbunov, Central Institute for Occupational Medicine, Berlin, GDR; Research Institute of Labor Hygiene and Occupational Diseases, Kiev]

[Abstract] Use of a complex of methods for data procurement and processing revealed the most informative parameters of encephalographic spontaneous activity in 16 subjects and indicators of autonomic regulation and actual characteristics of work of an operator in a complex with the EEG in 41 subjects during activation of the central nervous system under different degrees of mental activity. Methods used included a modified "Konzentrations-Leistungs-Test" [capacity for concentration] with four-factor analysis of variance and multiple comparison of average values and linear stepwise discriminant analysis. Use of the modified concentration test with subsequent four-factor dispersion analysis made possible differentiation of components of mental loading, including perceptive-motor conditions and time deficit. Linear stepwise discriminant analysis showed a high degree of congruence between EEG variables required to describe activation processes during mental loading and those which were obtained to describe deactivation processes during increasing drowsiness. Only at relatively high mental loading was it possible to detect significant redistribution of the contribution of the studied physiological functions which reflect the degree of central nervous system reaction, the autonomic regulation and purposeful activity of man. The combined use of these methods greatly increased reliability of classification of states of activation. Further use of the method is recommended. Figure 1; references 20: 4 Russian, 16 Western.

2791/9835
CSO: 1840/237

UDC 612.15:615.15

REACTION OF CENTRAL NERVOUS SYSTEM TO DIETHYXIM AND PHENOBARBITAL AFTER EFFECT OF TRIORTHOCRESYLPHOSPHATE

Kiev FIZIOLOGICHESKIY ZHURNAL in Russian Vol 31, No 4, Jul-Aug 85 (manuscript received 20 Jun 84) pp 439-445

[Article by L.K. Yershova and N.V. Kokshareva, Kiev Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics]

[Abstract] The effect of diethyxim and phenobarbital on the bioelectrical activity of the cerebral cortex of chickens under the influence of triorthocresylphosphate (TCP) was studied in 8-White-Russian chickens after a single injection of TCP into the craw in a neuroparalytic dose (0.8 g/kg) and after injection into 8 chickens of TCP accompanied by intramuscular injection of diethyxim in a therapeutic dose (40 mg/kg perorally). Toxic effect of TCP and effectiveness of the drugs were judged by chicken behavior, physical appearance, weight change and motor activity. Times of appearance and severity of symptoms of intoxication were measured. The functional state of the central nervous system was studied by an electroencephalographic method. The single dose of TCP produced a pronounced neurotoxic effect on the chickens, with significant disturbance of the state of the central nervous system. It caused development of paresis and paralysis, accompanied by phase changes of bioelectrical activity of the lobar and occipital regions of the cerebral cortex. The use of diethyxim and phenobarbitol counteracted development of paralysis with concurrent normalization of bioelectrical activity of the brain structures studied. Figures 2; references 14: 11 Russian, 3 Western.

2791/9835
CSO: 1840/237

UDC 616.833-001.4+616-003.9:615.849.19

EFFECT OF LOW ENERGY LASER IRRADIATION ON DYNAMICS OF REPARATIVE PROCESSES IN PERIPHERAL NERVE

Kiev FIZIOLOGICHESKIY ZHURNAL in Russian Vol 31, No 4, Jul-Aug 85 (manuscript received 19 Dec 84) pp 462-467

[Article by V.L. Zelyak, Ye.M. Yurakh, I.P. Gerelyuk and I.I. Gerzanich, Ivano-Frankovsk Medical Institute]

[Abstract] The effect of laser radiation on degeneration and regeneration processes and on the microcirculation and cyclic nucleotides level in dissected-and-then-sutured sciatic nerves was studied in 70 cats after dissection and suturing of the sciatic nerve in the middle third of the thigh under ether anesthesia. Cats underwent daily exposure to an LG-75

helium-neon laser with output power of 20 mW and light flow density of 2.5 mW/cm^2 for 15 days. The laser radiation shortened the time of ascending degeneration in the proximal segment of the nerve and secondary degeneration of the nerve fibers proceeded more intensely. There was moderate expansion of all links of the microcirculatory stream while the overall capacity of the intratruncal blood stream increased and more effective vascularization of the nerve occurred. The cyclic nucleotide level in the damaged nerve increased. The laser radiation produces more intense regeneration of the damaged nerve. Figure 1; references 16 (Russian).

2791/9835
CSO: 1840/237

RESEARCH ON AGING

Moscow IZVESTIYA in Russian 9 Jan 87 p 6

[Article by S. Tutorskaya, IZVESTIYA special correspondent, Kiev-Moscow]

[Abstract] At a recent gerontology meeting in Kiev a number of Soviet and foreign scientists discussed various theories and experiments on aging and longevity. Many factors can in one way or another be related to the aging process; however a definitive and generally accepted mechanism for the aging process has not yet been agreed upon. Nevertheless, it is clear that nutrition, stress and the environment, as well as genetic endowment, are important factors in aging, geriatric diseases, and longevity. More intensive research in this area is of particular importance, especially since in the USSR there has been no further improvement in life span for the past few years.

12172/9835
CSO: 1840/308

UDC 612.815.89

SELECTIVE PARASYMPATHETIC GANGLIONIC BLOCKERS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 292, No 2, Jan 87
(manuscript received 12 May 86) pp 497-501

[Article by V.Ye. Gmiro, S.D. Groysman, N.Ya. Lukomskaya, L.V. Melnichenko, S.Ye. Serdyuk and V.I. Skok, academician, UkrSSR Academy of Sciences, Scientific Research Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad; Scientific Research Institute of Physiology, Kiev State University imeni T.G. Shevchenko; Institute of Evolutionary Physiology and Biochemistry imeni I.M. Sechenov, USSR Academy of Sciences, Leningrad; Donetsk State Medical Institute imeni M. Gorky; Institute of Physiology imeni A.A. Bogomolets, Ukrainian SSR Academy of Sciences, Kiev]

[Abstract] Extensive studies were conducted on cats, guinea pigs and dogs to define the spectrum and potency of selective parasympathetic ganglionic blocking agents, using both intact animals and isolated parasympathetic and synpathetic ganglia, and isolated organs in acute and long-term experiments. The studies were conducted with a series of compounds of the following structure: $[R^1R^2R^3\overset{+}{N}-(CH_2)_n-\overset{+}{N}R^4R^5R^6]\cdot 2Br^-$, where n = 2-10, and R = various chemical radicals. Studies of the bis-cationic compounds were complemented by studies on selected mono-cationic agents ($[CH_3-(CH_2)_n-\overset{+}{N}R^1R^2R^3]\cdot Br^-$, n = 9-15, and R = various chemical groups). The data were analyzed in comparison with hexonium, leading to a compilation of structure-activity data indicating that combinations of highly lipophilic radicals with certain cationic groups may be promising in the design of specific parasympathetic ganglionic blockers. References 8: 4 Russian, 4 Western.

12172/9835
CSO: 1840/326

UDC 616.833-003.93-02:616.833-007.253-089.843-031:611.13

MORPHOLOGICAL AND FUNCTIONAL ASPECTS OF NERVE REGENERATION IN VASCULAR GRAFT CONDUIT

Leningrad ARKHIV ANATOMII, GISTOLOGII IN EMBRIOLOGII in Russian Vol 91, No 12, Dec 86 (manuscript received 25 Feb 86) pp 26-33

[Article by Ye.I. Chumasov, L.D. Yenin, K.M. Svetikova and G.N. Akoyev, Laboratory of Experimental Histology, Department of Morphology, Institute of Experimental Medicine, USSR Academy of Medical Sciences, Leningrad; Laboratory of Receptor Physiology, Institute of Physiology imeni I.P. Pavlov, USSR Academy of Sciences, Leningrad]

[Abstract] Male Wistar rats (180-220 g) were employed in studies on the histological and electrophysiological correlates of sciatic nerve regeneration and recovery of the sensory endings in footpads, following implantation of an arterial graft to serve as a conduit. Anatomic patency of the 8-10 mm lesions first became apparent within a month, while complete regeneration required 6 months. Cutaneous receptors appeared after 6 months, reaching a maximum number in 11-12 months. The first action potential appeared after 6 months, with typical characteristics becoming manifest after ca. 11 months. Pin prickes of the skin elicited pulsation in individual nerve fibers after 9 months, with full recovery of cutaneous sensitivity seen after 13 months. These observations provide further support for the view that arterial grafts constitute a superior conduit for nerve regeneration. Figures 3; references 14: 8 Russian, 6 Western.

12172/9835
CSO: 1840/378

UDC 612.82

SPECIES SPECIFIC ASYMMETRY IN RATS LEARNING TO SOLVE EXTRAPOLATION TASKS

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA: BIOLOGIYA in Russian No 1, Feb 86 (manuscript received 7 Jun 84) pp 36-44

[Article by V.L. Bianki and Ye.B. Filippova]

[Abstract] In a study of the roles of the right and left hemispheres in solving extrapolation problems, the ability to solve such tasks by Norway rats with isolated functioning brain hemispheres was investigated. It was shown that this ability, manifested by the initial response to a moving stimulus, was about equally affected whether the right or left hemisphere was excluded from the process. Existence of interhemispheric asymmetry was n noted in short, adaptive learning periods of extrapolation experiments during repeated presentation. In such cases the left hemisphere dominated the process in young rats, whereas the right was dominant among the adults.

Additional adaptation to the experimental conditions led to a change in adult rats: from the right hemisphere dominance to that of the left. Figures 4; references 18: 15 Russian, 3 Western.

7813/9835
CSO: 1840/413

UDC 577.3

ELECTROSTATIC SCREENING AND ARTIFACTS IN MEASURING ELECTRIC FIELDS OF BIOLOGICAL OBJECTS

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA: BIOLOGIYA in Russian No 1, Feb 86 (manuscript received 28 May 84) pp 90-92

[Article by V.N. Yegorov, V.V. Popov and V.I. Zabatin]

[Abstract] Acknowledging the difficulties of obtaining artifact-free measurements of electric fields generated by biological objects, the effect of the surroundings was evaluated by constructing various types of isolation boxes. The optimal design was a cylinder 40 cm long, 25 cm in diameter made of tin-plated material. Such a cylinder had a constant surface-potential of 6 mV without noticeable gradient effect throughout the container. References 9: 4 Russian, 5 Western.

7813/9835
CSO: 1840/413

UDC 616.12-089.166-06:616.127-008.922.1-008.64-085.272.7-039.71

ANTIHYPOXIC EFFECTS OF INOSINE IN HEART SURGERY WITH PROLONGED EXTRACORPOREAL CIRCULATORY SUPPORT AND HYPOTHERMIA

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 4, Apr 85 (manuscript received 7 Aug 84) pp 48-51

[Article by I.V. Stupin, A.I. Novokshonov, A.I. Malashenkov, L.I. Loginova, B.N. Bogonatov, T.V. Artyukhina and V.M. Gusakova, 2nd Moscow Medical Institute imeni N.I. Pirogov]

[Abstract] The experimentally-demonstrated antihypoxic effects of inosine were subjected to a clinical trial in 26 patients undergoing heart surgery with prolonged extracorporeal circulatory assist and hypothermia. Inosine was administered as an i.v. drip in 500 ml 5% glucose in a dose of 1 mg/kg, with 2/3rds of the solution administered 60 min before going on--and 1/3rd after going off--extracorporeal circulatory support. Extracorporeal circulation was maintained for 3-4 h, with the esophageal temperature at

21-22°C during the operation. Hemodynamic, blood gases, and temperature monitoring demonstrated that the effects of inosine were those expected from the experimental animal studies, i.e., inosine enhanced glycolytic processes and promoted more efficient oxygen utilization by the tissues due to inhibition of lipid peroxidation. As a result the viability of vital organs was maintained at a higher level of performance due to diminished hypoxic sequelae. In addition, the temperature balance of the body proceeded to change in a more measured manner without sudden temperature drops or increases. Figures 1; tables 1; references 9: 4 Russian, 5 Western.

12172/9835
CSO: 1840/1031

UDC 612.434.14.018:612.821

EFFECTS OF VASOPRESSIN ON AVOIDANCE BEHAVIOR IN FOOD-DEPRIVED RATS

Moscow VESTNIK MOSKOVSKOGO UNIVERSITETA: BIOLOGIYA in Russian No 2, Apr-Jun 86) pp 16-20

[Article by N.L. Kvekveskiri, S.A. Titov and N.A. Tushmalova]

[Abstract] The effects of arginyl-vasopressin (AVP) on the acquisition of an avoidance reflex were tested in normally-fed rats (170-220 g) and rats deprived of food. AVP was administered in doses of 1 or 5 μg/kg intraperitoneally after a training session for 5 days. In the control animals administration of 1 μg of AVP resulted in an improvement in the rate of acquisition of the avoidance behavior to a limited extent, whereas the 5 μg regimen and a deleterious effect. However, both doses were effective in improving the performance of food-deprived animals in a dose-related fashion. The acquisition and retention of the conditioned avoidance behavior was seen to reflect the effects of AVP on memory processes, since the performance of untreated, food-deprived animals was below that of the control rats. Food deprivation was, therefore, regarded as a long-term stress factor. Previous studies had shown that long-term stress results in significant release of endogenous vasopressin into the blood stream. In the present demonstration, exogenous AVP was interpreted to potentiate the effects of the endogenous peptide on vasopressin-sensitive formations, accounting thereby for improved performance. Figures 3; references 12: 8 Russian, 4 Western.

12172/9835
CSO: 1840/411

UDC 612.821.6.015.014.42

ROLE OF RETARDING NEURONS IN LOCKING FUNCTION OF BRAIN

Moscow USPEKHI SOVREMENNOY BIOLOGII in Russian Vol 102, No 5, Sep-Oct 86 p 221

[Article by V.P. Novikov]

[Synopsis] A theory is substantiated according to which the role of a transferring element between two neuron ensembles is played by a retarding neuron, which, during the excitation from one of the ensembles, blocks the conduction of the impulse by the constantly available locking element (for example, the corresponding axon or dendrite). In case of a simultaneous excitation of both ensembles, the transferring retarding neuron receives from them a cumulative stimulation and is subjected to extinction. The braking power of the locking element is released, and the impulse can be transmitted from one ensemble to the other. Biochemical neurophysiological and morphological data are presented for the recommended locking mechanism.

12999/9835
CSO: 1840/316

RAYON CONSULTATIVE-DIAGNOSTIC CENTERS

Moscow VECHERNYAYA MOSKVA in Russian 9 Oct 86 p 1

[article by N. Timashkov: "A Regional Health Center"]

[Text] One of the most important aspects of the special, multi-faceted Moscow Project "Health" for the years 1986-1990 and up to the year 2000 is the creation of Consultative-Diagnostic Centers (CDC's). The first rayon CDC recently opened at Hospital No. 23 in Zhdanovskiy Rayon, where it occupies a separate ward.

Today this CDC has acquired new biochemical apparatus. Installation of modern centrifuges, autoclaves, and sterilizers in one room has begun.

Together with the hospital's chief physician, A.S. Kultyshev, let us get acquainted with the Center. We immediately spot an unusual apparatus--a gamma-thyroradiometer. It is used to investigate the functions of thyroid iron.

A young woman sits beside the apparatus--more precisely, by its small, "sensitive", funnel-shaped opening. She was sent here by a uchastok physician who suspected that she had an adenoma and who wanted to make his diagnosis more exact.

Numbers flash rapidly on the thyroradiometer's electronic display. After two or three minutes Aleksandr Stepanovich [Kultyshev] shows me the graph produced by the machine. The so-called "cold spot" is clearly visible, marked by blue dots. What is this? A cyst? In order to determine what it is, one more rapid test must be performed.

We follow the patient to another room, where ultrasound scanning is conducted. The procedure takes only a few minutes. It is found that the patient has a benign tumor, but, all the same, an operation will have to be performed.

"The Center has already been open for six months," says Dr. Kultyshev, as we go to look at the equipment on other floors of the ward. "In this time it has been demonstrated that the CDC is a promising direction in practical public health services. The uchastok physician can efficiently hone his diagnosis with our assitance, and he can get advice from highly-qualified

specialists--doctors, or candidates, of medical sciences. Scientists from the First Moscow Medical Institute work with us as consultants.

"It is no secret that in some institutes and laboratories, unique pieces of apparatus often gather dust in storerooms, while many medical institutions have great need for them. The optimal solution is to concentrate medical technology in CDC's. Here they are near the patients and here, for example, we utilize them full time, in two shifts.

"What, indeed, does this do for us? It enables us to practice timely preventive medicine. And now, when the level of disability among residents of Moscow is very high, this is especially important. Rapid tests reduce the number of sick days. An example is the patient we just performed tests on. It would have taken from three to five days to make the same diagnosis in an ordinary hospital.

"This rayon CDC has been established through the collective efforts of the First Moscow Medical Institute, the USSR corporation "Soyuzmedtekhnika", the Central Public Health Administration of the Moscow Gorispolkom, and, of course, our physicians."

We stop by the radioisotope diagnostic laboratory. The corridor is empty. The gamma-chamber, equipped with the most up-to-date apparatus--computers, displays--seems to be in a deep sleep.

"We have been at a standstill for three days now," Aleksandr Stepanovich says with annoyance. "We have had to send sixty patients home until things get better. And it is all because the workers of the Moscow interoblast division of the All-Union Association "Izotop" have not been delivering the essential components for our investigations regularly. We have no way to print out graphs, and they pay no attention to our insistent demands and requests."

Any new undertaking brings new problems. The USSR Ministry of Health did not allow for staffing CDC's with their own technicians who could service and repair the equipment in a timely fashion. It would also be good to have a bioengineer. Currently only a limited number of such specialists are educated at the N.E. Bauman Higher Technical Secondary School. There are not enough to go around. The USSR Ministry of Higher Education must solve this problem soon. Modern medicine is inconceivable without qualified technical personnel.

13124/9835
CSO: 1840/109

PERSONNEL AND FACILITIES AVAILABLE TO PUBLIC HEALTH

Moscow VESTNIK STATISTIKI in Russian No 1, Jan 87 pp 55, 60-61

[Tables from source journal published by Izdatelstvo "Finansy i statistiki", 1987]

[Excerpts]

Table 12. Number of female physicians, all fields (at end of year)

Year	Thousands of people	Percentage of women in total number of physicians
1940	96.3	62
1960	327.1	76
1970	479.6	72
1980	683.1	69
1985	802.4	69

Women physicians constitute the majority of the total number of physicians. In the US, according to the latest published data, there are only approximately 72,500 female physicians, or 12% of the total number of physicians.

Table 20. Treatment and Prophylactic Assistance to Women
(at end of year; thousands)

	1940	1960	1970	1980	1985
Number of beds (medical and obstetric) for pregnant women and women in labor	147.1	213.4	223.8	230.4	245.6
Number of women's consultation clinics [konsultalsiya], children's outpatient clinics [poliklinika i ambulatoriya] (both independent or in other institutions)	8.6	16.4	21.0[1]	24.3[1]	27.9[1]

[1]Women's consultation clinics numbered: 9.7 thousand in 1970, 10.4 thousand in 1980, 11.1 thousand in 1985; children's outpatient clinics numbered: 11.3 thousand in 1970, 13.9 thousand in 1980, 16.8 thousand in 1985.

Table 21. Number of beds (medical and obstetric) for pregnant women and women in labor according to union republic
(at end of year; thousands)

	1940	1960	1970	1980	1985
USSR	147.1	213.4	223.8	230.4	245.6
RSFSR	90.7	112.9	110.3	113.1	118.9
Ukrainian SSR	35.0	48.9	45.1	39.7	40.4
Belorussian SSR	5.4	6.7	6.9	7.3	7.4
Uzbek SSR	2.8	8.7	13.4	19.2	23.7
Kazakh SSR	4.3	11.9	16.3	16.4	17.4
Georgian SSR	1.9	3.9	4.4	4.3	4.5
Azerbaijan SSR	2.0	3.3	5.6	6.6	6.8
Lithuanian SSR	0.4	2.4	2.5	2.5	2.5
Moldavian SSR	0.6	4.2	4.5	3.6	4.0
Latvian SSR	0.8	1.7	1.4	1.6	1.7
Kirghiz SSR	0.8	2.6	4.0	4.5	4.7
Tajik SSR	0.6	1.4	2.9	4.0	5.4
Armenian SSR	0.7	2.2	2.8	2.8	2.9
Turkmen SSR	0.8	1.7	2.8	3.8	4.2
Estonian SSR	0.3	0.9	0.9	1.0	1.1

Table 22. Treatment and prophylactic assistance to children (at end of year; thousands)

	1940	1960	1970	1975	1980	1985
Number of beds for children in hospitals	89.7	260.1	462.2	529.3	567.2	597.9
Number of beds in children's sanatoriums[1]	94.9[2]	120.0	154.1	162.5	166.8	168.9
Total treated in children's sanatoriums (year)	390.3	369.2	518.2	628.5	686.5	729.2

[1] In month sanitariums are completely set up.
[2] 1939.

Table 23. Number of beds in children's sanatoriums by union republic

	1939	1960	1970	1980	1985
USSR	94.9	120.0	154.1	166.8	168.9
RSFSR	52.0	63.3	82.0	87.0	86.2
Ukrainian SSR	26.2	28.2	34.2	37.4	38.1
Belorussian SSR	3.3	2.4	2.9	3.4	3.8
Uzbek SSR	3.6	6.4	8.2	11.0	12.9
Kazakh SSR	2.9	3.7	6.9	8.0	8.4
Georgian SSR	1.9	2.3	2.4	2.8	3.2
Azerbaijan SSR	2.5	3.6	4.0	3.0	2.7
Lithuanian SSR	0.1	1.4	2.0	1.7	1.7
Moldavian SSR	0.6	0.6	1.1	1.1	1.1
Latvian SSR	0.3	1.6	1.8	1.7	1.7
Kirghiz SSR	0.2	0.8	2.1	2.7	3.0
Tajik SSR	0.2	0.7	1.8	2.7	2.7
Armenian SSR	0.4	1.7	1.9	2.5	2.0
Turkmen SSR	0.7	1.5	1.7	1.2	0.9
Estonian SSR	-	1.8	1.1	0.6	0.5

13287/9835
CSO: 1840/474

PHARMACEUTIC OUTPUT IN BELORUSSIA

Minsk NARODNOYE KHOZYAYSTVO BELORUSSII in Russian No 8, Aug 86 p 26

[Article by K. Kanus: "Against All the Diseases"]

[Text] Today [August 1986] the "Minmedpreparaty" Production Association was recognized as a leading establishment in the manufacture among other items, of antibiotics, blood substitutes, organo-preparations, and pharmaceuticals. It produces about a hundred medicinal preparations, nine of which are issued nowhere else in the country. Besides that, it manufactures a substantial part of the whole USSR production of tetracyclin, heparin and the insulins.

The plant's laboratory is the basic center of research work. It coordinates all the scientific activities and it establishes cooperation with the scientific research institutes of the republic and the nation. In recent years, the Association has assimilated and handed over dozens of new medications and their derivatives to the USSR Ministry of Health. Every year, newly manufactured products are shown at VDNKH [Exhibition of Achievements of the National Economy] of the USSR and Belorussian SSR, as well as at other republic, specialized and international fairs.

In the current Five-Year Plan the list of new medications is going to be considerably enlarged. It is planned to set up the output of pharmaceuticals produced by a fundamentally new, radiochemical method. The worker collectives of the Association are faced with the task of increasing productivity by 42%, mostly by means of increased labor productivity.

The General Director of the Association: G.P. Andreyevskiy, says that the target has to be achieved primarily by a technical renovation. In particular, automatic lines will be installed for bagging, packing and bottling ready-made drugs. The plant is working on the development of rifamin, whose automated production is expected to be introduced in 1989. The workers, on their own, plant to install thriteen units of equipment. "We have high hopes", says the director, "that this can be accomplished by better organization, increased work efficiency, by remodeling storage places, automation of loading-reloading and transporting-storing work stations. This will free 150 workers engaged in manual work."

Since the first days of the new Five-Year Plan, the collective has been working at a fast pace. In four months, production was two hundred thousand rubles over plan. Because of this excellent result, the Association has been awarded a first place and a challenge banner for the first quarter by the USSR Ministry of Medical and Microbiological Industry.

13131/9835
CSO: 1840/055

UDC 616-006.04-084

METHODOLOGICAL APPROACHES TO EVALUATION OF ONCOLOGICAL SERVICES: CONTROL OF ACCURACY OF CANCER STATISTICS

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 12, Dec 86
(manuscript received 28 Feb 86) pp 3-7

[Article by V.M. Merabishvili, I.V. Kiselnikova and N.S. Kovaleva, Order of the Red Banner of Labor Scientific Research Institute of Oncology imeni Professor N.N. Petrov, USSR Ministry of Health, Leningrad]

[Abstract] In order to improve the reliability of cancer data, a reliability index (RI) has been proposed to control such statistics. The RI is based on the numerical ratio of the mortality figures to the morbidity figures for cancer patients, with the understanding that the RI cannot exceed 1 (or 100%). The RI has the advantage that it can be used in a differential manner with respect to age, sex, occupation, etc., as well as with respect to the type of tumor, site of occurrence, and so forth. Data for 1980 have shown that the RI ranged from 0.763 for the USSR as a whole, to a high of 0.97 for the Georgian SSR. However, between 1970 and 1980 the RI for the USSR has shown an improvement of 5%, pointing to the greater accuracy of cancer statistics at the present time. References 16: 13 Russian, 3 Western.

12172/9835
CSO: 1840/379

UDC 617.55-083.89:681.31

USE OF COMPUTERS IN DETERMINING NEED FOR EMERGENCY SURGERY

Moscow SOVETSKAYA MEDITSINA in Russian No 1, Jan 87
(manuscript received 1 Jun 86) pp 54-56

[Article by V.I. Antonov and A.A. Rybchenko, Department of Health, Primorskiy Kray Executive Committee]

[Abstract] Description is provided of a computer-based diagnostic consultation service established in Vladivostok in 1979 to serve remote locations and ships. The primary objective is to provide diagnostic assistance in case of abdominal conditions seeming to require emergency surgery. To date, some 5000 consultations have been provided over the telephone, teletype or radio, using a coded list of symptoms to facilitate computer-based diagnosis. On the whole, this approach resulted in a 5% increase in the number of operations for acute abdominal conditions, being particularly valuable, as expected, in cases with atypical symptomatology. Although the program is still in its early stages, this approach appears to be particularly suited to large territories with patients in remote and distant locations and obviously will have to be expanded to accomodate a greater scope of medical needs. References 1 (Russian).

12172/9835
CSO: 1840/403

UDC 616-006.04-084.3

ACCOMPLISHMENT OF ONCOLOGICAL COMPONENT OF ANNUAL HEALTH SCREENING OF POPULATION

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 9, Sep 86
(manuscript received 20 Aug 85) pp 3-6

[Article by A.I. Potapov, B.N. Zyryanov, V.P. Nazarenko and V.I. Tikhonov]

[Abstract] Cancer screening as a component of dispensarization (annual health screening programs) is designed to identify risk factors as well as to detect new cases. A three-year study conducted in Tomsk and encompassing 30,225 subjects in the oncologic screening program subjected to a questionnaire demonstrated that 5882 (19.6%) were at risk of lung cancer, and 7296 (24.3%) at risk of stomach cancer. A diagnostic work-up in the lung-cancer risk group resulted in a positive diagnosis in 1.3% of the cases. In the latter category, 24.1% of the subjects were in the preclinical stage of a malignancy, while 29.74% were found to suffer from nonspecific chronic diseases. A similar work-up on the subjects at risk of stomach cancer revealed a frank malignancy in 1.50% of the cases. Early stages were uncovered in

69.80%, and premalignant changes in 24.8% of the subjects in this category. The combination of a questionnaire on health practices and habits, occupation and life-style, in conjunction with a thorough diagnostic work-up, has been found to be an effective means of early diagnosis in mass screening programs. References 15 (Russian).

12172/9835
CSO: 1840/407

UDC 616-006:371.3

FURTHER IMPROVEMENTS IN CANCER EDUCATION AT MEDICAL INSTITUTES: EXPERIENCE AT SIBERIAN AND FAR EASTERN MEDICAL INSTITUTES

Leningrad VOPROSY ONKOLOGII in Russian Vol 32, No 9, Sep 86
(manuscript received 5 Dec 85) pp 57-60

[Article by B.N. Zyryanov and G.I. Kovalenko]

[Abstract] The methods used in cancer education at medical institutes are assessed in light of recent pedagogic developments, as well as on the basis of the increase in cancer morbidity. The data demonstrated that oncology as a medical discipline is largely neglected in medical institutes, a problem that is to some extent due to the outdated education directives issued in 1977 by the USSR Ministry of Health. There are no well-defined courses of study, with the topic of oncology scattered among the various other disciplines. In addition, the institutes lack a sufficient staff of oncological specialists. The general consensus reached is that teaching of oncology should be more specialized, with the Chairs of Oncology assuming full responsibility for all patients with tumors. Only a resolute restructuring of the teaching programs will bring about the desired improvement in the training of future physicians in oncology.

12172/9835
CSO: 1840/407

CORRUPT PSYCHIATRISTS IN MOSCOW

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 31 Jan 87 and 1 Feb 87 (pages not given)

[Article by V. Andriyanov under the heading "Criminal Diagnosis"]

[Abstract] In the first part of his article Andriyanov describes the case of Vladimir Nikolayevich Kuznetsov, a department store director accused of taking bribes, who, through the intermediary of Garri Kayumovich Zairov, senior scientific assistant at the Moscow Scientific Research Institute of Psychiatry, bribed Taras Nikolayevich Dudko, a senior scientific worker at the All-Union Serbskiy Scientific Research Institute of General and Forensic Psychiatry, to issue him a certificate requesting examination at a cardiology clinic. When the clinic pronounced him healthy, Andriyanov states, Kuznetsov turned to the oblast psychiatric hospital, where he was certified as insane and unfit to stand trial. This diagnosis was later discounted and Kuznetsov was tried and found guilty. However, Andriyanov asserts, "It gradually became clear that Kuznetsov's story was by no means exceptional, and a whole system for saving criminals from criminal responsibility in psychiatric hospitals came to light." He goes on to describe the case of a murderer who was confined to a psychiatric hospital but released 3 years later--after favorable reports from psychiatrists--only to commit two further murders.

The second part of the article describes the case of Taubi, a young Uzbek anxious to avoid being drafted into the army, who, by bribing Dudko and Zairov, was issued with typewritten instructions on how to feign Schizophrenia. Taubi "ultimately had sufficient intelligence and character to stop this unseemly, dirty game, to think, and to confess his crime."

Andriyanov then gives brief accounts of other psychiatrists who have taken bribes: Yuriy Lvovich Massover, former chairman of the No. 6 Mobile Criminal Psychiatry Experts Commission attached to the Moscow No. 1 Clinical Psychiatric Hospital, who now faces criminal charges, and P. Rabinovich, section chief at the Moscow Oblast Clinical Psychiatric Hospital, who, after being allowed to resign, was reemployed in his former post. "The USSR Ministry of Health heard nothing about the violations

in the criminal psychiatry system". Andriyanov asserts. He continues:

"V.I. Malyukin, investigator for particularly important cases at the Moscow prosecutor's office, has sent a report to V.N. Mudrak, chief of the Moscow Gorispolkom Main Health Administration, and V.V. Lyabin, chief of the Moscow Oblispolkom Main Health Administration. The report speaks of violations, revealed in the course of investigation, of the procedure for hospitalizing citizens and for putting them through the medical commission for determination of disability and of instances of people suffering from no illness being in hospital and of unsubstantiated diagnoses. It has been proposed that strict control be established over the work of medical examination institutions and the procedure for hospitalizing and examining, in psychiatric hospitals, people who are being observed by the legal investigation organs".

/9835
CSO: 1840/397

UDC 616.89-008.441.13-085.851

PSYCHOPREVENTION AND PSYCHOTHERAPY OF ALCOHOLISM

Moscow KLINICHESKAYA MEDITSINA in Russian No 1, Jan 87
(manuscript received 5 Feb 86) pp 134-137

[Article by V.Ye. Rozhnov and M.Ye. Burno, Chair of Psychotherapy and Substance Abuse Sciences, Central Order of Lenin Institute for the Advanced Training of Physicians, Moscow]

[Abstract] The entire struggle in the USSR against alcoholism is undergoing drastic changes with the encouragement of the Party and the government. The intention is to design and implement a humanistic approach to this problem based on socialist concepts of culture and civilization. To that end, present formulations call for extensive education efforts commencing in grade school and continuing through advanced educational institutions, reinforcement of the efforts of voluntary sobriety societies, and intensification of the antialcoholic efforts of the medical and public health authorities. The approach also strives to engender strong antialcoholism in the population as a whole and to eliminate life and work stresses that contribute to alcoholism. Medical treatment programs are being designed to meet a variety of needs and situations, beginning with psychiatric and social assistance, and ending with medical treatment and follow-up. References 13 (Russian).

12172/9835
CSO: 1840/402

UDC 577.391

REVIEW OF BOOK BY E.N. GONCHARENKO AND YU.B. KUDRYASHOV, "CHEMICAL PROTECTION AGAINST RADIATION INJURY", (PRACTICAL MANUAL AND LECTURES ON RADIOBIOPHYSICS)

Moscow RADIOBIOLOGIYA in Russian Vol 25, No 4, Jul-Aug 85 pp 569-570

[Review by I.G. Akoyev of book "Chemical Protection Against Radiation Injury"]

[Text] In 1982, Moscow University published a textbook by Yu.B. Kudryashov and B.S. Berenfeld entitled "The Principles of Radiobiophysics". The book received recognition among a broad group of teachers and specialists, including biologists, physicists, physicians and chemists. "Chemical Protection Against Radiation Injury", the practical manual and lectures on radiation biophysics, being reviewed herein, is the first and necessary link in publication of educational practical manuals.

The information in the book has been divided into three chapters. Given in the first chapter are methodological instructions for carrying out radiobiological work on animals. It contains a description of radiation plants, material pertaining to dosimetry, recommendations on the irradiation of biological objects and necessary information for the selection of animals for experiments. This procedural information, upon which any radiobiological experiment is based, is successfully tied in with theoretical issues relating to the radiosensitivity of biological objects. The selection of an animal which has already been exposed to radiation is just as important, however. This is why the biological characteristics and indications of radiation injury represent important links in radiobiological experiments. The second chapter of the book is devoted to the evaluation and prognosis of radiation injury. The data are presented in a clear and understandable manner, and encompass hematological indices, cytological and cytogenetic methods for the indication of radiation injury, the biochemical evaluation of radiation injury, the prediction of the degree of severity of an illness as well as the immune response of the organism to exposure to ionizing radiation. Each of these indices may be extremely important in evaluating how effective chemical agents against radiation are. Of particular interest is the chapter devoted to several topical issues in the biophysical evaluation of the mechanisms behind radiation injury. These include the mechanisms behind the free-radical peroxidation of lipids, how radiation acts on the

superstructured DNA organization as well as the possibility of using radiation as an instrument in biophysical and radiobiological investigations. The first two chapters of the book serve as a kind of introduction to the third chapter, which focuses on chemical protection against radiation injury.

There are amny monographs around today which address themselves to this important radiobiological issue. To their credit, the authors of the book at hand present the vast and at times contradictory information in a strict and systematic manner, within the framework of a practical manual and lectures on radiation biophysics. In addition, the authors chose not to give a detailed description of the sequence of executing tasks and procedures as is otherwise traditional in studies with experimental work (which are described in practical manuals on biophysics, biochemistry and so on), instead focusing the attention of the reader on methodological ("practical manual") and theoretical ("lectures") issues. These issues include the requirements which radioprotective substances must meet, the various ways to evaluate them, the selection of optimum conditions for the effective action of preparations, the classification of radioprotective substances and the characteristic features of their effect on the organism, models and methods of preliminary selection and the study of the effect exerted by radioprotective substances.

A great deal of attention is focused on the book on the mechanisms behind the anti-radiation effect. A critical examination of these mechanisms brought the authors to the conclusion that the successful solution to the problem of chemical protection should have as its basis the comprehensive biological characteristics of the primary links of radiation pathology and of the various mechanisms behind the radioprotective effect of chemical protection. Listed in the appendix are the main radiological values and their units, examples of calculations when switching over to the ISU, main formulas and calculation examples during the processing of results from radiobiological investigations.

This book by B.N. Goncharenko and Yu.B. Kudryashov is written on a highly scientific level, and the material is both interesting and clear. It may be recommended not only to biophysicists, but to specialists in a broad range of areas who are interested in radiobiophysics.

13126/9835
CSO: 1840/252

UDC 616-001.28-06:616.9-085.33-033.1:611.36-018.1

BINDING OF ANTIBIOTICS BY SUBCELLULAR FRACTIONS OF RAT LIVER HOMOGENATES AND THEIR INTRACELLULAR DISTRIBUTION IN ACUTE RADIATION SICKNESS

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 30, No 6, Jun 85 (manuscript received 13 Dec 84) pp 438-441

[Article by G.Ya. Kivman, A.Ye. Gulyayev, V.A. Kulishov, B.A. Nadirova and K.G. Cherevko, Karaganda Medical Institute; Affiliate for Development of Prepared Medications of the Scientific Research Institute for Biological Testing of Chemical Compounds, Moscow]

[Abstract] Endogenous infection is a frequent cause of death in radiation sickness. Broad spectrum antibiotics are therefore widely used to treat radiation sickness. However, the cellular pharmacokinetics of chemical therapeutic preparations in radiation pathology have not been described. This article studies the interaction of antibiotics with intracellular structures in white rats with acute radiation sickness. The interaction of the subcellular fractions of rat liver homogenate was studied for tetracyclin, indicating a breakdown of binding of tetracyclin with rat hepatocyte organoids in radiation sickness. A similar effect was observed for gentamycin and erythromycin. Rifampicin was not affected. In all cases except rifampicin, mitochondrial accumulation of antibiotics and their intracellular distribution were disrupted. The degree of disruption of binding of isolated subcellular fractions to antibiotics and their distribution in the hepatocytes in radiation sickness depend on the specifics of the mechanism of these processes under normal conditions. References 24: 21 Russian, 3 Western.

6508/9835
CSO: 1840/289

UDC 615.33.03:[619+636

PROBLEMS RELATED TO USE OF ANTIBIOTICS IN ANIMAL HUSBANDRY AND VETERINARY MEDICINE

Moscow ANTIBIOTIKI I MEDITSINSKAYA BIOTEKHNOLOGIYA in Russian Vol 31, No 10, Oct 86 (manuscript received 29 Aug 86) pp 725-729

[Article by V.F. Kovalev, All-Union Scientific Quality Control Institute of Veterinary Preparations, Moscow]

[Abstract] A review is presented of Soviet practices in the use of antibiotics as feed additives and in veterinary medicine. In the former case two antibiotics are used extensively as growth stimulants: bacitracin and (feed)grisein. However, the use of antibiotics in this capacity carries the risk of engendering resistant microorganisms, as well as in altering the normal flora of the animals. There is obvious need to expand the armamentarium of antibiotics used for this purpose, and recent studies with Flavomycin have been very encouraging. Approximately 25 antibiotics find regular use in Soviet veterinary medicine. The basic problems pertain to inappropriate dosage forms, vehicles, lack of long-acting preparations, as well as inadequate supplies. All of these factors constitute factors that must be resolved in order to insure success of the USSR Food Program.

12172/9835
CSO: 1840/337

LATVIAN SCIENTIFIC, PRODUCTION AND CLINICAL ASSOCIATION ESTABLISHED

Vilnius SOVETSKAYA LITVA in Russian 31 Dec 86 p 1

[Excerpts] A new interdepartmental scientific, industrial and clinical association titled "Endokrinologiya" was established by decree of the Central Committee of the Communist Party of Lithuania and the republic's Council of Ministers with the objective of further increasing the efficiency of scientific research in the area of experimental endocrinology and hormone chemistry, accelerating the incorporation of results from scientific research into industry and public health and strengthening ties between science and production. The main scientific, technical and industrial tasks of the new association include the development of basic and applied research, the manufacture and study of new endocrine preparations and their incorporation into production and the clinic as well as the improvement of existing and creation of new technologies and methods of prophylaxis, epidemiology, diagnosis and patient treatment.

13287/9835
CSO: 1840/263

BRIEF

MEDICAL RESEARCH COOPERATION WITH FINLAND--Medical scientists of the USSR and Finland will conduct joint research under 60 projects this year, a TASS correspondent was told at the Foreign Relations Department of the USSR Ministry of Health. These are, among others, research efforts in cardiology, oncology, pediatrics, ophthalmology, rheumatology and virology, and developing medical instruments. Particular attention is given to the quest for preventive treatment of some diseases. [Text] [Moscow TASS in English 0639 GMT 6 Jan 87] /9835

CSO: 1840/341-E

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